Stantec Consulting Services Inc.
350 Missouri Avenue, Suite 100
Jeffersonville, IN 47130-3001
Tel: (812) 285-4060
Fax: (812) 285-4061

Stantec

November 17, 2009

Kentucky Division of Water
Water Quality Certification Section
200 Fair Oaks Lane
Frankfort, KY 40601

Attention: **Mr. Jesse Robinson**

Dear Mr. Robinson:

Reference: **E.ON-US/LG&E Cane Run Power Station**
Proposed Landfill Project
Louisville, Jefferson County, Kentucky

On behalf of our client, E.ON U.S., Stantec Consulting Services Inc (Stantec) respectfully submits the attached Sections 401 and 404 permit application package for a proposed project involving permanent impacts to the Waters of the Commonwealth at the Cane Run Power Station in Louisville, Kentucky. Upon approval of the floodplain application by Louisville/Jefferson County Metropolitan Sewer District (Louisville Metro Sewer), the permit application package will be updated to include supporting documentation.

E.ON U.S. is proposing to create a storage landfill for the purpose of containing coal combustion byproducts (CCB). Cane Run Power Station is an electric generating station that includes three coal-fired generating units (Units 4, 5 and 6) equipped with Flue Gas Desulfurization (FGD) systems. Units 4 and 5 have "lime" FGD systems and Unit 6 has a "dual alkali" FGD system.

The raw materials used at Cane Run Station consist of carbide lime and coal. The carbide lime, a by-product from acetylene, primarily calcium hydroxide is used in slurry form in the scrubbers to control air emissions. The coal is from western Kentucky, and is typical of that mined in the region's coal fields.

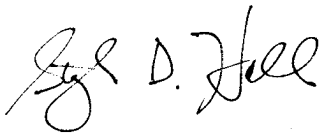
The by-products generated during the combustion of coal at Cane Run Station include fly ash, bottom ash, and FGD sludge. Fly ash from Units 4, 5, and 6 is combined with the FGD sludge in a Sludge Processing Plant (SPP). The processed waste, consisting of blended fly ash, dewatered FGD sludge, and lime (the stabilization additive), is managed in an on-site special waste landfill. Bottom ash is sluiced to an ash pond located on-site.

The current special waste landfill is nearing capacity, and a new CCB landfill on the Cane Run Power Station property is proposed. The proposed landfill design is approximately 61.2 acres in size, with an estimated 5.7 million cubic yards of storage capacity. Clay fill materials will be borrowed to create a liner system before dry CCB materials would be compacted in the landfill. Borrow material will be hauled to the landfill from a nearby Metropolitan Sewer District project. Once operational storage capacity of the landfill is met, it will be capped with 24 inches of vegetated soil as per the requirements of the KY Division of Waste Management.

The proposed activities would create permanent impacts to JWUS. Impacts would include 1,617 linear feet (0.137 acre) of intermittent stream and 1,845 linear feet (0.403 acre) of ephemeral stream, for a total of 3,462 linear feet (0.540 acre). In addition, 1.597 acre of wetland will be impacted by the project. Mitigation is proposed for these impacts through the payment of in-lieu fees, as well as the purchase of forested wetland mitigation credit through the PTRL Mitigation Bank. The KDOW WQC Fee Payment form will be submitted promptly following financial processing by E.ON US.

Thank you for consideration of this application. Please do not hesitate to call me or John Dovak with questions at (812) 285-4060.

Sincerely,



Stephen D. Hall
Senior Associate
Tel: (812) 285-4060
Fax: (812)285-4061
Stephen.Hall@stantec.com

Attachment: Section 404 and 401 Permit Application Package

c. Ms. Lee Anne Devine, USACE, CERL-OP-F, P.O. Box 59, Louisville, KY 40201-0059

Stantec

E.ON-US/LG&E Cane Run Power Station
Proposed Landfill Project

Jefferson County, Kentucky
Section 401/404 Clean Water Act (CWA)
Individual Permit Application Package

November 9, 2009

E.ON-US, LG&E
E.ON-US/LG&E CANE RUN POWER STATION
PROPOSED LANDFILL PROJECT
LOUISVILLE, JEFFERSON COUNTY, KENTUCKY
SECTION 401/404 CLEAN WATER ACT (CWA)
INDIVIDUAL PERMIT APPLICATION PACKAGE

I. Section 404 CWA Department of the Army Permit Application

1. Permit Application Form
2. Block 22: Project Impacts Summary Tables

   Table 1. Impacts to Wetlands

   Table 2. Impacts to Streams
3. Block 24: Adjacent Property Owners
4. Avoidance and Minimization Statement

II. Section 401 Water Quality Certification Application

1. Permit Application Form
2. Water Quality Certification Fee Payment Form

III. Jurisdictional Determination

1. Jurisdictional Waters of the United States Summary Tables

   Table 3. Delineated Jurisdictional Stream Segments

   Table 4. Delineated Jurisdictional Wetlands
2. Rapid Bioassessment Protocol (RBP) Data Sheets
3. Wetland Delineation Data Sheets
4. Jurisdictional Determination Forms
   - i. Perennial Streams/Wetlands
   - ii. Intermittent Streams/Wetlands
   - iii. Ephemeral Streams/Wetlands
   - iv. Non-Jurisdictional Streams/Wetlands

IV. Compensatory Mitigation

1. Mitigation Statement
2. Table 5. In-Lieu Fee Calculation Table

V. Agency Correspondence

1. Threatened and Endangered Species Correspondence
   - i. Kentucky State Nature Preserves Commission
   - ii. U.S. Fish and Wildlife Service
   - iii. Kentucky Department of Fish and Wildlife Resources
2. State Historic Preservation Officer

   A Cultural Resource Survey for a Borrow Area, Settling Ponds, and Flyash Storage Area at the LG&E Cane Run Generating Plant in Jefferson County, Kentucky

E.ON-US, LG&E
E.ON-US/LG&E CANE RUN POWER STATION
PROPOSED LANDFILL PROJECT
LOUISVILLE, JEFFERSON COUNTY, KENTUCKY
SECTION 401/404 CLEAN WATER ACT (CWA)
INDIVIDUAL PERMIT APPLICATION PACKAGE

VI. Project Maps

Figure 1. Location Map

Figure 2. Jurisdictional Waters of the US Map (36" x 24" Color)

Figure 2-1 Jurisdictional Waters of the US Map (8.5" x 11" Black and White)

Figure 2-2 Jurisdictional Waters of the US Map (8.5" x 11" Black and White)

Figure 3. Proposed Impacts Map (36" x 24" Color)

Figure 3-1 Proposed Impacts Map (8.5" x 11" Black and White)

Section 404 CWA
Department of the Army
Permit Application

Permit Application Form

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT OMB APPROVAL NO.

Public reporting burden for this collection of information is estimated to average 5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10: 1413, Section 404. Principal Purpose: These laws require authorizing activities in, or affecting, navigable waters of the United States, the discharge or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine Uses: Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
E.ON-US (LG&E)	Stantec Consulting Services Inc.
6. APPLICANT'S ADDRESS E.ON-US Attn: W. Paul Puckett 220 West Main Street Louisville, KY 40232	9. AGENT'S ADDRESS Stantec Consulting Services Inc. Attn: Stephen Hall 350 Missouri Ave., Suite 100 Jeffersonville, IN 47130
7. APPLICANT'S PHONE NOs. W/AREA CODE a. Residence b. Business 502-627-4659	10. AGENT'S PHONE NOs. W/AREA CODE a. Residence b. Business 812-786-3154

STATEMENT OF AUTHORIZATION

I hereby authorize, Stephen Hall, Stantec Consulting Services, Inc. to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

W. Paul Puckett 11/6/09

APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OR PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

Cane Run Generating Station Landfill Expansion

13. NAME OF WATERBODY, IF KNOWN (if applicable)
Un-named Tributaries to Mill Creek

14. PROJECT STREET ADDRESS (if applicable)
5252 Cane Run Road
Louisville, KY 40216

15. LOCATION OF PROJECT
Jefferson (COUNTY) Kentucky (STATE)

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) **Section, Township, Range, Lat/Lon, and/or Accessors's Parcel Number, for example.**

The proposed E.ON-US Cane Run Landfill Expansion project encompasses approximately 60 acres within the Cane Run facility property, near Mill Creek in Louisville, Jefferson County, Kentucky. The project site is located off Cane Run Road within the USGS Lanesville Quad, at latitude / longitude coordinates 38.181° N, 85.883 ° W.

17. DIRECTIONS TO THE SITE

From Louisville, take I-264/Watterson Expressway to Exit 5B to Cane Run Road/KY-1934. Head southwest on Cane Run Road for approximately 3.3 miles. Turn right onto Dover Rd/KY-1934 and then left onto KY-1934. The E.ON-US/LG&E Cane Run Facility will be on the right.

18. Nature of Activity (Description of project, include all features)

E.ON-US is proposing to expand their landfill operations for the purpose of storing coal combustion by-products (CCB) produced at the Cane Run Power Station. The proposed landfill design is approximately 61.2 acres in size, with an estimated 5.7 million cubic yards of storage capacity. Clay fill materials will be borrowed to create a liner system before dry CCB materials would be compacted in the landfill. Once operational storage capacity is met, the landfill will be capped with 24 inches of vegetated soil cover.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of the project is to provide storage capacity for CCB generated from the Cane Run Station.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

In order to provide adequate, safe and cost-effective storage for the CCB generated by this facility, it is necessary to construct an on-site landfill

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

Soil and rock will be borrowed and used to fill waters; approximately 1,578 cubic yards.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Proposed activities involve impacts to 8 ephemeral streams (1,845 feet, 0.403 acres), and 2 intermittent streams (1,617 feet, 0.137 acres).
SEE ATTACHMENTS FOR MORE DETAIL

23. Is Any Portion of the Work Already Complete? Yes __ No X IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

All property directly adjoining the project area is owned by the permitee.

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT _____ DATE _____ SIGNATURE OF AGENT _____ DATE 11/9/09

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Block 22: Project Impacts Summary Tables

BLOCK 22: PROJECT IMPACTS SUMMARY TABLE
E.ON-US/LG&E CANE RUN POWER STATION
PROPOSED LANDFILL PROJECT
LOUISVILLE, JEFFERSON COUNTY, KENTUCKY

Table 1. Impacts to Wetlands

Impact Type	JWUS[1] Wetland ID	Cowardin Classification	Area of Impact (acres)
Landfill	Wetland A	PEM1	1.504
Landfill	Wetland L	PFO1	0.093
		TOTAL:	**1.597**

Table 2. Impacts to Streams

Impact Type	JWUS[1] Stream ID	Flow Regime	Linear Feet of Impact	Area of Impact (acres)
Landfill	E-1a	Ephemeral	846	0.194
Landfill	E-1	Ephemeral	71	0.016
Landfill	E-2	Ephemeral	57	0.013
Landfill	E-3	Ephemeral	96	0.022
Landfill	E-4	Ephemeral	543	0.125
Landfill	E-6	Ephemeral	6	0.001
Landfill	E-7	Ephemeral	87	0.016
Landfill	E-9	Ephemeral	139	0.016
Landfill	I-1	Intermittent	1094	0.101
Landfill	I-2	Intermittent	523	0.036
		TOTAL:	**3,462**	**0.540**

[1] Jurisdictional Waters of the United States

Block 24: Adjacent Property Owners

BLOCK 24: ADJACENT PROPERTY OWNERS
E.ON-US/LG&E CANE RUN POWER STATION
PROPOSED LANDFILL PROJECT
LOUISVILLE, JEFFERSON COUNTY, KENTUCKY

Name of Property Owner(s)	*Louisville and Jefferson County Riverport*				
Address	*6900 Riverport Drive (multiple)*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 935-6024*				

Name of Property Owner(s)	*Walker, Gregory & Debra*				
Address	*5349 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 290-0612*				

Name of Property Owner(s)	*Burkhead, Sherry G & Boyd Bruce*				
Address	*5307 Galaxie Dr. (multiple)*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 449-1068*				

Name of Property Owner(s)	*Desantiago, Panfilio*				
Address	*5345 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 447-9522*				

Name of Property Owner(s)	*Fraley, Curtis & Bonnie*				
Address	*3416 Kramers Lane, Trlr 105*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40216*
Phone No.	*Unlisted*				

Name of Property Owner(s)	*Miles, Philburn E. Jr. & Tammy M.*				
Address	*5339 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 448-1192*				

Name of Property Owner(s)	*Cunningham, Mitchell*				
Address	*5337 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502)448-3287*				

Name of Property Owner(s)	*Givens, Joe D. & Theda D.*				
Address	*5335 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 447-5320*				

Name of Property Owner(s)	*Miller, Cecil D. & Magdalen*				
Address	*5333 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 447-3809*				

BLOCK 24: ADJACENT PROPERTY OWNERS
E.ON-US/LG&E CANE RUN POWER STATION
PROPOSED LANDFILL PROJECT
LOUISVILLE, JEFFERSON COUNTY, KENTUCKY

Name of Property Owner(s)	*Fey, Bill & Janet*				
Address	*6519 Astral Dr.*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*Unlisted*				

Name of Property Owner(s)	*Schrader, Stanley & Anna*				
Address	*3429 Rudd Ave*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40212*
Phone No.	*(502) 290-5958*				

Name of Property Owner(s)	*Boaz, Shirley A.*				
Address	*5319 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 449-6077*				

Name of Property Owner(s)	*Hack, David*				
Address	*5317 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*Unlisted*				

Name of Property Owner(s)	*Wheeler, Donald L. & Doris*				
Address	*5315 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 448-8610*				

Name of Property Owner(s)	*Wheeler, Ronald L. & Betty L.*				
Address	*5313 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 447-5778*				

Name of Property Owner(s)	*Greer, Patrick N. & Dena R..*				
Address	*5311 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 448-2561*				

Name of Property Owner(s)	*Wolf, Charles*				
Address	*5200 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 448-8823*				

Name of Property Owner(s)	*Little, Kathy G.*				
Address	*5307 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 742-8879*				

BLOCK 24: ADJACENT PROPERTY OWNERS
E.ON-US/LG&E CANE RUN POWER STATION
PROPOSED LANDFILL PROJECT
LOUISVILLE, JEFFERSON COUNTY, KENTUCKY

Name of Property Owner(s)	*Shamrock Group, LLC (c/o Michael Cushing)*				
Address	*3001 Fort Pickens Road*				
City	*Lagrange*	*State*	*KY*	*Zip Code*	*40031*
Phone No.	*(502) 222-5605*				

Name of Property Owner(s)	*Cissell, Frank M.*				
Address	*5013 Tumeric Lane*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 935-6812*				

Name of Property Owner(s)	*Lashley, Garry & Cheryl*				
Address	*5233 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40216*
Phone No.	*(502) 447-1970*				

Name of Property Owner(s)	*Skaggs, Jon T. & Elizabeth*				
Address	*5253 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40216*
Phone No.	*(502) 447-4712*				

Name of Property Owner(s)	*Cravens, Bill & Mary L.*				
Address	*2272 Blue Lick Rd*				
City	*Shepherdsville*	*State*	*KY*	*Zip Code*	*40165*
Phone No.	*(502) 921-0186*				

Name of Property Owner(s)	*Vogt, Bernard & Shirley J..*				
Address	*5225 Cane Run Road*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40216*
Phone No.	*(502) 448-0547*				

Name of Property Owner(s)	*Louisville and Jefferson County Metro Government*				
Address	*444 S.5th Street*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40202*
Phone No.	*(502) 574-5810*				

Name of Property Owner(s)	*C.T. Gernert Inc., (c/o Dave Kelton)*				
Address	*473 Stone Creek Dr.*				
City	*Lexington*	*State*	*KY*	*Zip Code*	*40503*
Phone No.	*(859) 294-0618*				

Name of Property Owner(s)	*Sadler, Lavenia*				
Address	*6730 Elmwood Avenue*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 448-0970*				

BLOCK 24: ADJACENT PROPERTY OWNERS
E.ON-US/LG&E CANE RUN POWER STATION
PROPOSED LANDFILL PROJECT
LOUISVILLE, JEFFERSON COUNTY, KENTUCKY

Name of Property Owner(s)	*Wallace, James Roy*				
Address	*6628 Huff Lane*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40258*
Phone No.	*(502) 447-9979*				

Name of Property Owner(s)	*Bramer, John & Sharon*				
Address	*7003 Ridge Run Road*				
City	*Georgetown*	*State*	*IN*	*Zip Code*	*47122*
Phone No.	*(812) 951-3185*				

Name of Property Owner(s)	*IC and K & I Terminal*				
Address	*Address Unknown - Franchise*				
City		*State*	*KY*	*Zip Code*	
Phone No.					

Name of Property Owner(s)	*Jerry Hargrove*				
Address	*213 Marengo Dr.*				
City	*Louisville*	*State*	*KY*	*Zip Code*	*40243*
Phone No.	*Unlisted*				

Avoidance and Minimization Statement

AVOIDANCE AND MINIMIZATION STATEMENT
E.ON-US/LG&E CANE RUN POWER STATION
PROPOSED LANDFILL PROJECT
LOUISVILLE, JEFFERSON COUNTY, KENTUCKY

To avoid and minimize impacts to Jurisdictional Waters of the U.S. (JWUS) from the proposed project, Stantec Consulting Services, Inc. identified the opportunity to partner with the Louisville Metro Sewer Department (MSD) to obtain excess material generated from a planned equalization basin project at the Derrick R. Guthrie Water Quality Treatment Center on Lower River Road in Louisville, Kentucky.

MSD's planned project includes the construction of an open air basin that will store up to 19.3 million gallons of excess flow during extreme wet weather events. The contents of the equalization basin will be released back into the treatment process at a later time when other flows to the plant have subsided enough to accommodate the additional volume of wastewater. The basin will generate approximately 78,000 cubic yards of excess material that will be hauled to the proposed Cane Run landfill. No JWUS will be impacted by MSD's equalization basin project.

By obtaining this excess material from MSD, E.ON-US/LG&E will be able to avoid impacts to more than 4,000 feet of ephemeral and intermittent streams and wetland acreage. Compared to the original Jurisdictional Determination study, utilizing this excess material will reduce JWUS impacts by approximately 15 of the total stream lengths/wetland acreages previous identified. Other alternatives explored in preliminary landfill design studies were estimated to cause greater impact to streams and wetlands.

Section 401
Water Quality Certification
Application

Permit Application Form

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES & ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRNOMENTAL PROTECTION
DIVISION OF WATER

APPLICATION FOR PERMIT TO CONSTRUCT ACROSS OR ALONG A STREAM AND / OR WATER QUALITY CERTIFICATION

Chapter 151 of the Kentucky Revised Statutes requires approval from the Division of Water prior to any construction or other activity in or along a stream that could in any way obstruct flood flows or adversely impact water quality. *If the project involves work in a stream, such as bank stabilization, dredging or relocation, you will also need to obtain a 401 Water Quality Certification (WQC) from the Division of Water.* This completed form will be forwarded to the Water Quality Branch for WQC processing. The project may not start until all necessary approvals are received from the KDOW. For questions concerning the WQC process, contact the WQC section at 502/564-3410.

If the project will disturb more than 1 acre of soil, you will also need to complete the attached Notice of Intent for Storm Water Discharges, and return both forms to the Floodplain management Section of the KDOW. This general permit will require you to create an implement an erosion control plan for the project.

1. **OWNER:** E.ON-US; Attn: W. Paul Puckett
   Give name of person(s), company, governmental unit, or other owner of proposed project.
   MAILING ADDRESS: 220 West Main Street
   Louisville, KY 40232
   TELEPHONE #: (502) 627-4659 **EMAIL:** Paul.Puckett@eon-us.com
2. **AGENT:** Stantec Consulting, Inc., Attn: Stephen Hall
   Give name of person(s) submitting application, if other than owner.
   ADDRESS: 350 Missouri Avenue, Suite 100
   Jeffersonville, IN 47130
   TELEPHONE #: (812) 285-4060 **EMAIL:** Stephen.Hall@stantec.com
3. **ENGINEER:** _____ **P.E. NUMBER:** _____
   Contact Division of Water if waiver can be granted.
   TELEPHONE #: _____ **EMAIL:** _____
4. **DESCRIPTION OF CONSTRUCTION:** E.ON-US is proposing to expand their landfill operations for the purpose of
   Describe the type and purpose of construction and describe stream impact
   storing coal combustion by-products (CCB) produced at the Cane Run Power Station. The proposed landfill design is approximately 61.2 acres in size, with an estimated 5.7 million cubic yards of storage capacity. The landfill will include an FML liner overlain by a drainage layer of graded bottom ash (CCB material produced at the site and beneficially reused for this construction). Clay fill materials will be borrowed to construct 24-inch thick cover on all exposed sides. Once operational storage capacity is met, the landfill will be capped with at least 24 inches of vegetated soil cover.
5. **COUNTY:** Jefferson **NEAREST COMMUNITY:** Louisville
6. **USGS QUAD NAME:** Lanesville **LATITUDE/LONGITUDE:** 38.181° N, 85.883° W
7. **STREAM NAME:** UT's to Mill Creek **WATERSHED SIZE (in acres):** 1925 acres
8. **LINEAR FEET OF STREAM IMPACTED:** 3,462 Linear Feet of Ephemeral and Intermittent Stream Impact
9. **DIRECTIONS TO SITE:** From Louisville, take I-264/Watterson Expressway to Exit 5 B to Cane Run Road/ KY-1934. Head southwest on Cane Run Road for approximately 3.3 miles. Turn right from Greenbelt Highway onto Dover Road/KY-1934 and follow KY-1934 to the left less than 1 mile to the E.ON-US/LG&E Cane Run Facility on the right.

10. **IS ANY PORTION OF THE REQUESTED PROJECT NOW COMPLETE?** ☐ Yes X No If yes, identify the completed portion on the drawings you submit and indicate the date activity was completed.

11. **ESTIMATED BEGIN CONSTRUCTION DATE:** May 2012

12. **ESTIMATED END CONSTRUCTION DATE:** December 2013

13. **HAS A PERMIT BEEN RECEIVED FROM THE US ARMY, CORPS of ENGINEERS?** ☐ Yes X No If yes, attach a copy of that permit.

14. **THE APPLICANT *MUST* ADDRESS PUBLIC NOTICE:**

(a) PUBLIC NOTICE HAS BEEN GIVEN FOR THIS PROPOSAL BY THE FOLLOWING MEANS:

_____ **Public notice in newspaper having greatest circulation in area** (provide newspaper clipping or affidavit)

_____ **Adjacent property owner(s) affidavits** (Contact Division of Water for requirements.)

(b) X I REQUEST WAIVER OF PUBLIC NOTICE BECAUSE:

Stantec and E.ON-US will publish public notices and/or hold public meetings during waste permitting process and 404 permitting process.

Contact Division of Water for requirements.

15. **I HAVE CONTACTED THE FOLLOWING CITY OR COUNTY OFFICIALS CONCERNING THIS PROJECT:**

MSD has been contacted on several occasions regarding the proposed activities. MSD personnel have participated in preliminary planning associated with the proposed construction and their input was sought regarding potential flooding impacts presented by the proposed locations. Stantec and E.ON-US will continue to involve appropriate members of City and County government to ensure the proposed project meets City and County Regulations.

Give name and title of person(s) contacted and provide copy of any approval city or county may have issued.

16. **LIST OF ATTACHMENTS:** **See Attached 'Permit Application Outline'**

List plans, profiles, or other drawings and data submitted. Attach a copy of a 7.5 minute USGS topographic map clearly showing the project location.

17. **I, Paul Puckett (owner) CERTIFY THAT THE OWNER OWNS OR HAS EASEMENT RIGHTS ON ALL PROPERTY ON WHICH THIS PROJECT WILL BE LOCATED OR ON WHICH RELATED CONSTRUCTION WILL OCCUR** (for dams, this includes the area that would be impounded during the design flood).

18. **REMARKS:** Floodplain Permit Application submission is awaiting Louisville Metro Sewer District Approval.

I hereby request approval for construction across or along a stream as described in this application and any accompanying documents. To the best of my knowledge, all the information provided is true and correct.

SIGNATURE: _____

Owner or Agent sign here. (If signed by Agent, a Power of Attorney should be attached.)

DATE: 11/6/09

SIGNATURE OF LOCAL FLOODPLAIN COORDINATOR:

_____

Permit application will be returned to applicant if not properly endorsed by the local floodplain coordinator.

DATE: _____

SUBMIT APPLICATION AND ATTACHMENTS TO:

Floodplain Management Section
Kentucky Division of Water
Water Quality Certification Section
200 Fair Oaks Lane
Frankfort, KY 40601

Water Quality Certification
Fee Payment Form

The KDOW WQC Fee Payment form will be submitted promptly following financial processing by E.ON US.

Jurisdictional Determination

Jurisdictional Waters of the United States
Summary Tables

TABLE 3. Delineated Jurisdictional Stream Segments

JWUS[1] Stream ID	Stream Name	Latitude	Longitude	Flow Regime	Watershed Area (acres)	Length of Segment (ft)	Estimated Area of Stream (ac)	RBP[2] ID	RBP Values	Quality
E-1a	UT to Mill Creek Cutoff	38.180207°	-85.884296°	Ephemeral	4.632	845.96	0.19420569	RBP 25	62	Poor
E-1	UT to Mill Creek Cutoff	38.181668°	-85.884677°	Ephemeral	0.172	71.06	0.01631313	RBP 26	62	Poor
E-2	UT to Mill Creek Cutoff	38.181668°	-85.884677°	Ephemeral	0.195	56.51	0.00518916	RBP 11	62	Poor
E-3	UT to Mill Creek Cutoff	38.181974°	-85.884078°	Ephemeral	0.133	95.89	0.02201331	RBP 26	62	Poor
E-4	UT to Mill Creek Cutoff	38.181838°	-85.883035°	Ephemeral	1.920	543.03	0.02493251	RBP 17	20	Poor
E-5	UT to Mill Creek Cutoff	38.183566°	-85.883761°	Ephemeral	3.835	524.45	0.02407943	RBP 4	89	Poor
E-6	UT to Mill Creek Cutoff	38.183488°	-85.883853°	Ephemeral	0.324	31.51	0.00217011	RBP 3	50	Poor
E-7	UT to Mill Creek Cutoff	38.18173°	-85.88101°	Ephemeral	0.160	87.41	0.01605326	RBP 13	50	Poor
E-8	UT to Mill Creek Cutoff	38.182458°	-85.881819°	Ephemeral	0.220	96.34	0.00663499	RBP 12	62	Poor
E-9	UT to Garrison Ditch	38.180807°	-85.880022°	Ephemeral	0.892	379.37	0.04354568	RBP 15	42	Poor
E-10	UT to Garrison Ditch	38.181591°	-85.880542°	Ephemeral	0.583	413.42	0.07592654	RBP 13	50	Poor
E-11	UT to Garrison Ditch	38.181063°	-85.879709°	Ephemeral	0.239	91.79	0.01264325	RBP 22	111	Poor
E-12	UT to Garrison Ditch	38.180893°	-85.879386°	Ephemeral	1.276	402.12	0.03692562	RBP 21	93	Poor
E-13	UT to Garrison Ditch	38.181017°	-85.879536°	Ephemeral	0.090	47.14	0.00216437	RBP 23	111	Poor
E-14	UT to Garrison Ditch	38.180993°	-85.879391°	Ephemeral	0.082	58.6	0.00269054	RBP 23	111	Poor

JURISDICTIONAL WATERS OF THE UNITED STATES SUMMARY TABLES
E.ON-US/LG&E CANE RUN POWER STATION
PROPOSED LANDFILL PROJECT
LOUISVILLE, JEFFERSON COUNTY, KENTUCKY

TABLE 3. Delineated Jurisdictional Stream Segments (CONTINUED)

E-15	UT to Garrison Ditch	38.177877°	-85.877815°	Ephemeral	0.637	116.96	0.00537006	RBP 17	20	Poor
E-16	UT to Mill Creek Cutoff	38.180957°	-85.878511°	Ephemeral	18.506	974.07	0.15653099	RBP 18	102	Poor
		38.180223°	-85.878174°					RBP 20	117	Poor
		38.179449°	-85.877681°					RBP 24	118	Poor
E-17	UT to Mill Creek Cutoff	38.180499°	-85.878424°	Ephemeral	0.089	31.5	0.00216942	RBP 19	94	Poor
E-18	UT to Mill Creek Cutoff	38.180863°	-85.878296°	Ephemeral	1.820	524.64	0.03613223	RBP 19	94	Poor
E-19	UT to Mill Creek Cutoff	38.1862°	-85.879941°	Ephemeral	0.378	79.52	0.01095317	RBP 5	79	Poor
E-20	UT to Mill Creek Cutoff	38.186255°	-85.88061°	Ephemeral	0.945	240.27	0.03309504	RBP 5	79	Poor
E-21	UT to Mill Creek Cutoff	38.185786°	-85.881098°	Ephemeral	0.508	64.8	0.00892562	RBP 5	79	Poor
E-22	UT to Mill Creek Cutoff	38.185457°	-85.881526°	Ephemeral	0.691	104.42	0.01438292	RBP 5	79	Poor
E-23	UT to Mill Creek Cutoff	38.185092°	-85.882037°	Ephemeral	1.000	105.22	0.01449311	RBP 5	79	Poor
E-24	UT to Mill Creek Cutoff	38.184834°	-85.881626°	Ephemeral	0.454	41.63	0.00573416	RBP 5	79	Poor
E-25	UT to Mill Creek Cutoff	38.184725°	-85.88176°	Ephemeral	0.260	30.97	0.00426584	RBP 5	79	Poor
E-26	UT to Mill Creek Cutoff	38.183109°	-85.875742°	Ephemeral	1.116	180.51	0.02486364	RBP 10	37	Poor
E-27	UT to Mill Creek Cutoff	38.183738°	-85.876758°	Ephemeral	6.636	499.07	0.06874242	RBP 8	49	Poor
E-28	UT to Mill Creek Cutoff	38.183738°	-85.876888°	Ephemeral	0.506	50.55	0.00696281	RBP 8	49	Poor
E-29	UT to Mill Creek Cutoff	38.183544°	-85.876664°	Ephemeral	0.383	105.5	0.01453168	RBP 8	49	Poor
E-30	UT to Mill Creek Cutoff	38.183627°	-85.876371°	Ephemeral	0.315	83.8	0.0115427	RBP 8	49	Poor
E-31	UT to Mill Creek Cutoff	38.184282°	-85.87623°	Ephemeral	7.854	275.07	0.07577686	RBP 8	49	Poor

JURISDICTIONAL WATERS OF THE UNITED STATES SUMMARY TABLES
E.ON-US/LG&E CANE RUN POWER STATION
PROPOSED LANDFILL PROJECT
LOUISVILLE, JEFFERSON COUNTY, KENTUCKY

TABLE 3. Delineated Jurisdictional Stream Segments (CONTINUED)

E-32	UT to Mill Creek Cutoff	38.184571°	-85.876127°	Ephemeral	0.317	205.47	0.01886777	RBP 28	49	Poor
E-33	UT to Mill Creek Cutoff	38.184731°	-85.876019°	Ephemeral	0.390	89.12	0.00818365	RBP 28	49	Poor
E-34	UT to Mill Creek Cutoff	38.185285°	-85.876848°	Ephemeral	2.312	474.61	0.04358219	RBP 28	49	Poor
E-35	UT to Mill Creek Cutoff	38.185125°	-85.876986°	Ephemeral	2.995	640.17	0.05878512	RBP 28	49	Poor
E-36	UT to Mill Creek Cutoff	38.183179°	-85.878409°	Ephemeral	3.915	403.14	0.03701928	RBP 27	61	Poor
E-37	UT to Mill Creek Cutoff	38.183111°	-85.878508°	Ephemeral	0.300	64.56	0.00592837	RBP 27	61	Poor
E-38	UT to Mill Creek Cutoff	38.182376°	-85.879696°	Ephemeral	2.541	470.69	0.04322222	RBP 9	59	Poor
		38.183203°	-85.87966°					RBP 27	61	Poor
E-39	UT to Mill Creek Cutoff	38.183304°	-85.879635°	Ephemeral	0.206	16.78	0.00154086	RBP 27	61	Poor
E-40	UT to Mill Creek Cutoff	38.182997°	-85.878353°	Ephemeral	0.205	20.33	0.00186685	RBP 27	61	Poor
I-1	UT to Mill Creek Cutoff	38.18204°	-85.884476°	Intermittent	21.946	1467.12	0.13472176	RBP 11	62	Poor
I-2	UT to Mill Creek Cutoff	38.182686°	-85.881343°	Intermittent	14.289	916.14	0.06309504	RBP 12	62	Poor
I-3	UT to Mill Creek Cutoff	38.186017°	-85.880045°	Intermittent	23.494	1774.6	0.12221763	RBP 1	103	Poor
P-1	Mill Creek Cutoff	38.184475°	-85.883238°	Perennial	1,925.074	6160.79	8.48593664	RBP 2	93	Poor
P-2	Garrison Ditch	38.180164°	-85.879108°	Perennial	35.838	1454.57	0.40070799	RBP 16	39	Poor
P-3	UT to Mill Creek Cutoff	38.181654°	-85.875217°	Perennial	225.894	1094.19	0.30142975	RBP 6	83	Poor
P-4	UT to Mill Creek Cutoff	38.182251°	-85.875271°	Perennial	410.997	1219.3	0.69978191	RBP 7	41	Poor

Sub Totals	**Ephemeral:**	9.638	1.199
	Intermittent:	4.158	0.320
	Perennial:	9.929	9.888
	Grand Total:	**23,725**	**11.407**

TABLE 4. Delineated Jurisdictional Wetlands

JWUS[1] Wetland ID	Associated Stream Name	Cowardin Classification	Area (acres)
Wetland A	I-2	PEM1	1.505
Wetland H	P-2	PSS1	0.057
Wetland I	E-16	PFO1	0.423
Wetland J	E-18	PFO1	0.793
Wetland K	E-18	PFO1	0.174
Wetland L	I-1	PFO1	0.093
		Total Wetland Area:	**3.045**

[1] Jurisdictional Waters of the United States

Rapid Bioassessment Protocol (RBP) Data Sheets

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	3.0
Flow Regime:	Intermittent, Non-seasonal	Depth (ft):	1.5
Channel is:	Natural	Lat:	38.18602
Water is:	Absent	Long:	-85.88005
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-1
County:	Jefferson	Stream ID:	I-3
City	Louisville	Date:	7/16/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	3
2. Embeddedness	(0-20)	4
3. Velocity/Depth Regime	(0-20)	7
4. Sediment Deposition	(0-20)	10
5. Channel Flow Status	(0-20)	4
6. Channel Alteration	(0-20)	19
7. Frequency of Riffles (Bends)	(0-20)	16
8a. Bank stability (Lt Bnk)	(0-10)	6
8b. Bank stability (Rt Bnk)	(0-10)	6
9a. Veg. Protection (Lt Bnk)	(0-10)	4
9b. Veg. Protection (Rt Bnk)	(0-10)	5
10a. Riparian Width (Lt Bnk)	(0-10)	10
10b. Riparian Width (Rt Bnk)	(0-10)	9
Total Habitat Score:		103

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

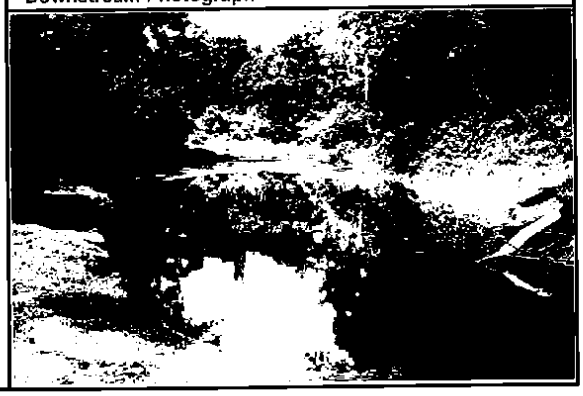
Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	Mill Creek Cutoff	Width (ft):	60.0
Flow Regime:	Perennial	Depth (ft):	5.0
Channel is:	Manipulated	Lat:	38.18448
Water is:	Clear	Long:	-85.88324
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-2
County:	Jefferson	Stream ID:	P-1
City	Louisville	Date:	7/16/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	5
2. Embeddedness	(0-20)	6
3. Velocity/Depth Regime	(0-20)	12
4. Sediment Deposition	(0-20)	6
5. Channel Flow Status	(0-20)	13
6. Channel Alteration	(0-20)	15
7. Frequency of Riffles (Bends)	(0-20)	16
8a. Bank stability (Lt Bnk)	(0-10)	2
8b. Bank stability (Rt Bnk)	(0-10)	2
9a. Veg. Protection (Lt Bnk)	(0-10)	5
9b. Veg. Protection (Rt Bnk)	(0-10)	5
10a. Riparian Width (Lt Bnk)	(0-10)	9
10b. Riparian Width (Rt Bnk)	(0-10)	7
Total Habitat Score:		103

Downstream Photograph



RBP Habitat Assessment - Low Gradient Stream

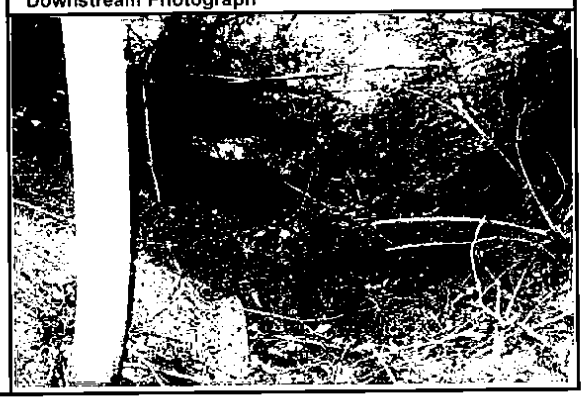
Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	3.0
Flow Regime:	Ephemeral	Depth (ft):	1.0
Channel is:	Natural	Lat:	38.18349
Water is:	Absent	Long:	-85.88385
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-3
County:	Jefferson	Stream ID:	E-6
City	Louisville	Date:	7/16/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	2
2. Embeddedness	(0-20)	2
3. Velocity/Depth Regime	(0-20)	1
4. Sediment Deposition	(0-20)	10
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	16
7. Frequency of Riffles (Bends)	(0-20)	0
8a. Bank stability (Lt Bnk)	(0-10)	1
8b. Bank stability (Rt Bnk)	(0-10)	0
9a. Veg. Protection (Lt Bnk)	(0-10)	1
9b. Veg. Protection (Rt Bnk)	(0-10)	1
10a. Riparian Width (Lt Bnk)	(0-10)	7
10b. Riparian Width (Rt Bnk)	(0-10)	9
Total Habitat Score:		50

Downstream Photograph



RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	2.0
Flow Regime:	Ephemeral	Depth (ft):	1.0
Channel is:	Natural	Lat:	38.18357
Water is:	Absent	Long:	-85.88376
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-4
County:	Jefferson	Stream ID:	E-5
City	Louisville	Date:	7/16/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	3
2. Embeddedness	(0-20)	19
3. Velocity/Depth Regime	(0-20)	1
4. Sediment Deposition	(0-20)	18
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	17
7. Frequency of Riffles (Bends)	(0-20)	1
8a. Bank stability (Lt Bnk)	(0-10)	6
8b. Bank stability (Rt Bnk)	(0-10)	7
9a. Veg. Protection (Lt Bnk)	(0-10)	4
9b. Veg. Protection (Rt Bnk)	(0-10)	3
10a. Riparian Width (Lt Bnk)	(0-10)	5
10b. Riparian Width (Rt Bnk)	(0-10)	5
	Total Habitat Score:	89

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	6.0
Flow Regime:	Ephemeral	Depth (ft):	3.0
Channel is:	Natural	Lat:	38.18483
Water is:	Absent	Long:	-85.88163
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-5
County:	Jefferson	Stream ID:	E-24
City	Louisville	Date:	7/16/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	5
2. Embeddedness	(0-20)	7
3. Velocity/Depth Regime	(0-20)	1
4. Sediment Deposition	(0-20)	10
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	19
7. Frequency of Riffles (Bends)	(0-20)	1
8a. Bank stability (Lt Bnk)	(0-10)	5
8b. Bank stability (Rt Bnk)	(0-10)	5
9a. Veg. Protection (Lt Bnk)	(0-10)	3
9b. Veg. Protection (Rt Bnk)	(0-10)	3
10a. Riparian Width (Lt Bnk)	(0-10)	10
10b. Riparian Width (Rt Bnk)	(0-10)	10
	Total Habitat Score:	79

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

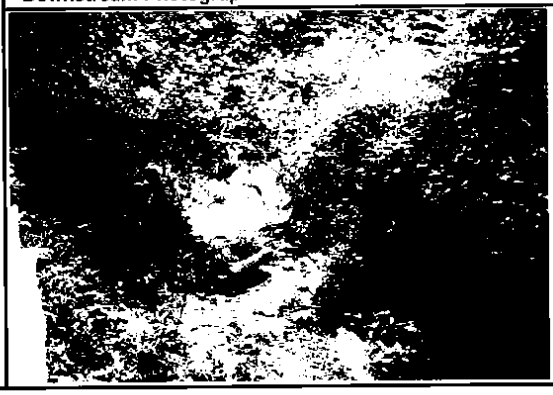
Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	12.0
Flow Regime:	Perennial	Depth (ft):	5.0
Channel is:	Natural	Lat:	38.18165
Water is:	Clear	Long:	-85.87522
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-6
County:	Jefferson	Stream ID:	P-3
City	Louisville	Date:	7/16/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	5
2. Embeddedness	(0-20)	8
3. Velocity/Depth Regime	(0-20)	9
4. Sediment Deposition	(0-20)	4
5. Channel Flow Status	(0-20)	2
6. Channel Alteration	(0-20)	16
7. Frequency of Riffles (Bends)	(0-20)	14
8a. Bank stability (Lt Bnk)	(0-10)	3
8b. Bank stability (Rt Bnk)	(0-10)	3
9a. Veg. Protection (Lt Bnk)	(0-10)	4
9b. Veg. Protection (Rt Bnk)	(0-10)	4
10a. Riparian Width (Lt Bnk)	(0-10)	5
10b. Riparian Width (Rt Bnk)	(0-10)	6
Total Habitat Score:		83

Downstream Photograph



RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	25.0
Flow Regime:	Perennial	Depth (ft):	5.0
Channel is:	Natural	Lat:	38.18225
Water is:	Clear	Long:	-85.87527
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-7
County:	Jefferson	Stream ID:	P-4
City	Louisville	Date:	7/16/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	2
2. Embeddedness	(0-20)	4
3. Velocity/Depth Regime	(0-20)	3
4. Sediment Deposition	(0-20)	3
5. Channel Flow Status	(0-20)	2
6. Channel Alteration	(0-20)	1
7. Frequency of Riffles (Bends)	(0-20)	2
8a. Bank stability (Lt Bnk)	(0-10)	5
8b. Bank stability (Rt Bnk)	(0-10)	3
9a. Veg. Protection (Lt Bnk)	(0-10)	4
9b. Veg. Protection (Rt Bnk)	(0-10)	3
10a. Riparian Width (Lt Bnk)	(0-10)	5
10b. Riparian Width (Rt Bnk)	(0-10)	6
	Total Habitat Score:	43

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	12.0
Flow Regime:	Ephemeral	Depth (ft):	3.0
Channel is:	Natural	Lat:	38.18428
Water is:	Absent	Long:	-85.87623
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-8
County:	Jefferson	Stream ID:	E-31
City	Louisville	Date:	7/16/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	3
2. Embeddedness	(0-20)	4
3. Velocity/Depth Regime	(0-20)	1
4. Sediment Deposition	(0-20)	2
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	16
7. Frequency of Riffles (Bends)	(0-20)	3
8a. Bank stability (Lt Bnk)	(0-10)	1
8b. Bank stability (Rt Bnk)	(0-10)	1
9a. Veg. Protection (Lt Bnk)	(0-10)	1
9b. Veg. Protection (Rt Bnk)	(0-10)	1
10a. Riparian Width (Lt Bnk)	(0-10)	8
10b. Riparian Width (Rt Bnk)	(0-10)	8
	Total Habitat Score:	49

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	4.0
Flow Regime:	Ephemeral	Depth (ft):	2.5
Channel is:	Natural	Lat:	38.18238
Water is:	Absent	Long:	-85.87970
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-9
County:	Jefferson	Stream ID:	E-38
City	Louisville	Date:	7/16/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	7
2. Embeddedness	(0-20)	1
3. Velocity/Depth Regime	(0-20)	2
4. Sediment Deposition	(0-20)	11
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	15
7. Frequency of Riffles (Bends)	(0-20)	1
8a. Bank stability (Lt Bnk)	(0-10)	3
8b. Bank stability (Rt Bnk)	(0-10)	3
9a. Veg. Protection (Lt Bnk)	(0-10)	3
9b. Veg. Protection (Rt Bnk)	(0-10)	3
10a. Riparian Width (Lt Bnk)	(0-10)	5
10b. Riparian Width (Rt Bnk)	(0-10)	5
	Total Habitat Score:	59

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	6.0
Flow Regime:	Ephemeral	Depth (ft):	1.0
Channel is:	Natural	Lat:	38.18311
Water is:	Absent	Long:	-85.87574
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-10
County:	Jefferson	Stream ID:	E-26
City	Louisville	Date:	7/16/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	2
2. Embeddedness	(0-20)	1
3. Velocity/Depth Regime	(0-20)	2
4. Sediment Deposition	(0-20)	8
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	7
7. Frequency of Riffles (Bends)	(0-20)	1
8a. Bank stability (Lt Bnk)	(0-10)	0
8b. Bank stability (Rt Bnk)	(0-10)	0
9a. Veg. Protection (Lt Bnk)	(0-10)	1
9b. Veg. Protection (Rt Bnk)	(0-10)	1
10a. Riparian Width (Lt Bnk)	(0-10)	7
10b. Riparian Width (Rt Bnk)	(0-10)	7
Total Habitat Score:		37

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	4.0
Flow Regime:	Intermittent, Non-seasonal	Depth (ft):	1.5
Channel is:	Natural	Lat:	38.18204
Water is:	Clear	Long:	-85.88448
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-11
County:	Jefferson	Stream ID:	I-1
City	Louisville	Date:	7/17/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	5
2. Embeddedness	(0-20)	12
3. Velocity/Depth Regime	(0-20)	4
4. Sediment Deposition	(0-20)	9
5. Channel Flow Status	(0-20)	6
6. Channel Alteration	(0-20)	12
7. Frequency of Riffles (Bends)	(0-20)	4
8a. Bank stability (Lt Bnk)	(0-10)	2
8b. Bank stability (Rt Bnk)	(0-10)	2
9a. Veg. Protection (Lt Bnk)	(0-10)	1
9b. Veg. Protection (Rt Bnk)	(0-10)	1
10a. Riparian Width (Lt Bnk)	(0-10)	2
10b. Riparian Width (Rt Bnk)	(0-10)	2
Total Habitat Score:		62

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	3.0
Flow Regime:	Intermittent, Non-seasonal	Depth (ft):	1.0
Channel is:	Natural	Lat:	38.18269
Water is:	Absent	Long:	-85.88134
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-12
County:	Jefferson	Stream ID:	I-2
City	Louisville	Date:	7/17/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	2
2. Embeddedness	(0-20)	5
3. Velocity/Depth Regime	(0-20)	3
4. Sediment Deposition	(0-20)	9
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	14
7. Frequency of Riffles (Bends)	(0-20)	2
8a. Bank stability (Lt Bnk)	(0-10)	2
8b. Bank stability (Rt Bnk)	(0-10)	2
9a. Veg. Protection (Lt Bnk)	(0-10)	2
9b. Veg. Protection (Rt Bnk)	(0-10)	1
10a. Riparian Width (Lt Bnk)	(0-10)	10
10b. Riparian Width (Rt Bnk)	(0-10)	10
	Total Habitat Score:	62

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Garrison Ditch	Width (ft):	8.0
Flow Regime:	Ephemeral	Depth (ft):	1.0
Channel is:	Natural	Lat:	38.18159
Water is:	Absent	Long:	-85.88054
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-13
County:	Jefferson	Stream ID:	E-10
City	Louisville	Date:	7/17/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	4
2. Embeddedness	(0-20)	6
3. Velocity/Depth Regime	(0-20)	1
4. Sediment Deposition	(0-20)	6
5. Channel Flow Status	(0-20)	2
6. Channel Alteration	(0-20)	5
7. Frequency of Riffles (Bends)	(0-20)	0
8a. Bank stability (Lt Bnk)	(0-10)	7
8b. Bank stability (Rt Bnk)	(0-10)	5
9a. Veg. Protection (Lt Bnk)	(0-10)	3
9b. Veg. Protection (Rt Bnk)	(0-10)	3
10a. Riparian Width (Lt Bnk)	(0-10)	6
10b. Riparian Width (Rt Bnk)	(0-10)	2
Total Habitat Score:		50

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Garrison Ditch	Width (ft):	5.0
Flow Regime:	Ephemeral	Depth (ft):	2.0
Channel is:	Manipulated	Lat:	38.18081
Water is:	Absent	Long:	-85.88002
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (µmhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-15
County:	Jefferson	Stream ID:	E-9
City	Louisville	Date:	7/17/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	4
2. Embeddedness	(0-20)	7
3. Velocity/Depth Regime	(0-20)	2
4. Sediment Deposition	(0-20)	8
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	6
7. Frequency of Riffles (Bends)	(0-20)	1
8a. Bank stability (Lt Bnk)	(0-10)	2
8b. Bank stability (Rt Bnk)	(0-10)	2
9a. Veg. Protection (Lt Bnk)	(0-10)	2
9b. Veg. Protection (Rt Bnk)	(0-10)	4
10a. Riparian Width (Lt Bnk)	(0-10)	2
10b. Riparian Width (Rt Bnk)	(0-10)	2
	Total Habitat Score:	42

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	Garrison Ditch	Width (ft):	12.0
Flow Regime:	Perennial	Depth (ft):	4.0
Channel is:	Manipulated	Lat:	38.18016
Water is:	Absent	Long:	-85.87911
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-16
County:	Jefferson	Stream ID:	P-2
City	Louisville	Date:	7/17/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	3
2. Embeddedness	(0-20)	2
3. Velocity/Depth Regime	(0-20)	4
4. Sediment Deposition	(0-20)	6
5. Channel Flow Status	(0-20)	5
6. Channel Alteration	(0-20)	6
7. Frequency of Riffles (Bends)	(0-20)	3
8a. Bank stability (Lt Bnk)	(0-10)	1
8b. Bank stability (Rt Bnk)	(0-10)	1
9a. Veg. Protection (Lt Bnk)	(0-10)	0
9b. Veg. Protection (Rt Bnk)	(0-10)	0
10a. Riparian Width (Lt Bnk)	(0-10)	3
10b. Riparian Width (Rt Bnk)	(0-10)	5
Total Habitat Score:		39

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Garrison Ditch	Width (ft):	2.0
Flow Regime:	Ephemeral	Depth (ft):	1.5
Channel is:	Manipulated	Lat:	38.17788
Water is:	Absent	Long:	-85.87782
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-17
County:	Jefferson	Stream ID:	E-15
City	Louisville	Date:	7/17/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	1
2. Embeddedness	(0-20)	5
3. Velocity/Depth Regime	(0-20)	1
4. Sediment Deposition	(0-20)	2
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	6
7. Frequency of Riffles (Bends)	(0-20)	1
8a. Bank stability (Lt Bnk)	(0-10)	0
8b. Bank stability (Rt Bnk)	(0-10)	0
9a. Veg. Protection (Lt Bnk)	(0-10)	0
9b. Veg. Protection (Rt Bnk)	(0-10)	1
10a. Riparian Width (Lt Bnk)	(0-10)	2
10b. Riparian Width (Rt Bnk)	(0-10)	1
Total Habitat Score:		20

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	7.0
Flow Regime:	Ephemeral	Depth (ft):	3.0
Channel is:	Natural	Lat:	38.18096
Water is:	Clear	Long:	-85.87851
Investigators:	Jared Edwards, Brian Fox	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-18
County:	Jefferson	Stream ID:	E-16
City	Louisville	Date:	7/28/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	8
2. Embeddedness	(0-20)	3
3. Velocity/Depth Regime	(0-20)	10
4. Sediment Deposition	(0-20)	3
5. Channel Flow Status	(0-20)	8
6. Channel Alteration	(0-20)	20
7. Frequency of Riffles (Bends)	(0-20)	8
8a. Bank stability (Lt Bnk)	(0-10)	3
8b. Bank stability (Rt Bnk)	(0-10)	3
9a. Veg. Protection (Lt Bnk)	(0-10)	8
9b. Veg. Protection (Rt Bnk)	(0-10)	8
10a. Riparian Width (Lt Bnk)	(0-10)	10
10b. Riparian Width (Rt Bnk)	(0-10)	10
	Total Habitat Score:	102

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

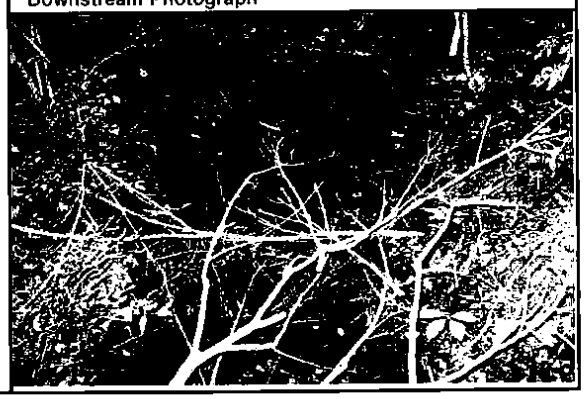
Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	3.0
Flow Regime:	Ephemeral	Depth (ft):	1.0
Channel is:	Natural	Lat:	38.18086
Water is:	Absent	Long:	-85.87830
Investigators:	Jared Edwards, Brian Fox	Temp (°F)	n/a
		pH	n/a
		Cond (µmhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-19
County:	Jefferson	Stream ID:	E-18
City	Louisville	Date:	7/28/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	3
2. Embeddedness	(0-20)	3
3. Velocity/Depth Regime	(0-20)	3
4. Sediment Deposition	(0-20)	8
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	20
7. Frequency of Riffles (Bends)	(0-20)	13
8a. Bank stability (Lt Bnk)	(0-10)	6
8b. Bank stability (Rt Bnk)	(0-10)	6
9a. Veg. Protection (Lt Bnk)	(0-10)	6
9b. Veg. Protection (Rt Bnk)	(0-10)	6
10a. Riparian Width (Lt Bnk)	(0-10)	10
10b. Riparian Width (Rt Bnk)	(0-10)	10
	Total Habitat Score:	94

Downstream Photograph



RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	7.0
Flow Regime:	Ephemeral	Depth (ft):	1.0
Channel is:	Natural	Lat:	38.18022
Water is:	Clear	Long:	-85.87817
Investigators:	Jared Edwards, Brian Fox	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-20
County:	Jefferson	Stream ID:	E-16
City	Louisville	Date:	7/31/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	3
2. Embeddedness	(0-20)	3
3. Velocity/Depth Regime	(0-20)	8
4. Sediment Deposition	(0-20)	13
5. Channel Flow Status	(0-20)	18
6. Channel Alteration	(0-20)	13
7. Frequency of Riffles (Bends)	(0-20)	3
8a. Bank stability (Lt Bnk)	(0-10)	9
8b. Bank stability (Rt Bnk)	(0-10)	9
9a. Veg. Protection (Lt Bnk)	(0-10)	10
9b. Veg. Protection (Rt Bnk)	(0-10)	10
10a. Riparian Width (Lt Bnk)	(0-10)	9
10b. Riparian Width (Rt Bnk)	(0-10)	9
	Total Habitat Score:	117

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

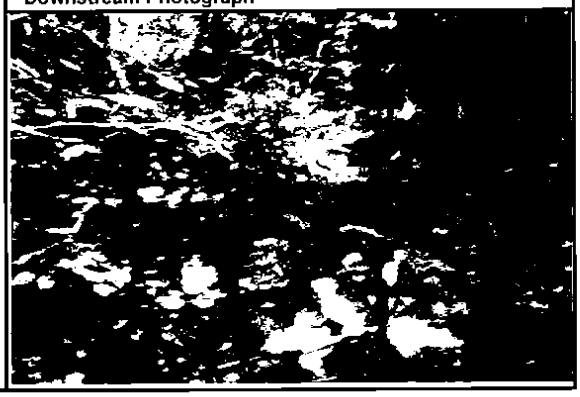
Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	4.0
Flow Regime:	Ephemeral	Depth (ft):	0.5
Channel is:	Natural	Lat:	38.18089
Water is:	Clear	Long:	-85.87939
Investigators:	Jared Edwards, Brian Fox	Temp (°F)	n/a
		pH	n/a
		Cond (µmhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-21
County:	Jefferson	Stream ID:	E-12
City	Louisville	Date:	7/31/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	3
2. Embeddedness	(0-20)	3
3. Velocity/Depth Regime	(0-20)	3
4. Sediment Deposition	(0-20)	3
5. Channel Flow Status	(0-20)	13
6. Channel Alteration	(0-20)	8
7. Frequency of Riffles (Bends)	(0-20)	8
8a. Bank stability (Lt Bnk)	(0-10)	8
8b. Bank stability (Rt Bnk)	(0-10)	8
9a. Veg. Protection (Lt Bnk)	(0-10)	8
9b. Veg. Protection (Rt Bnk)	(0-10)	8
10a. Riparian Width (Lt Bnk)	(0-10)	10
10b. Riparian Width (Rt Bnk)	(0-10)	10
Total Habitat Score:		93

Downstream Photograph



RBP Habitat Assessment - Low Gradient Stream

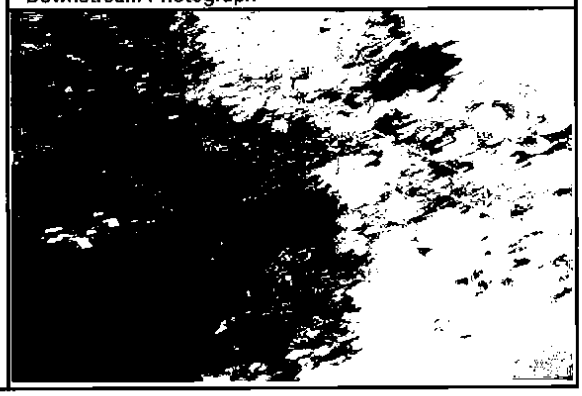
Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	6.0
Flow Regime:	Ephemeral	Depth (ft):	3.0
Channel is:	Natural	Lat:	38.18106
Water is:	Clear	Long:	-85.87971
Investigators:	Jared Edwards, Brian Fox	Temp (°F)	n/a
		pH	n/a
		Cond (umhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-22
County:	Jefferson	Stream ID:	E-11
City	Louisville	Date:	7/31/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	13
2. Embeddedness	(0-20)	13
3. Velocity/Depth Regime	(0-20)	13
4. Sediment Deposition	(0-20)	8
5. Channel Flow Status	(0-20)	3
6. Channel Alteration	(0-20)	18
7. Frequency of Riffles (Bends)	(0-20)	13
8a. Bank stability (Lt Bnk)	(0-10)	1
8b. Bank stability (Rt Bnk)	(0-10)	1
9a. Veg. Protection (Lt Bnk)	(0-10)	4
9b. Veg. Protection (Rt Bnk)	(0-10)	4
10a. Riparian Width (Lt Bnk)	(0-10)	10
10b. Riparian Width (Rt Bnk)	(0-10)	10
Total Habitat Score:		111

Downstream Photograph



RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	2.0
Flow Regime:	Ephemeral	Depth (ft):	1.0
Channel is:	Natural	Lat:	38.18102
Water is:	Clear	Long:	-85.87954
Investigators:	Jared Edwards, Brian Fox	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-23
County:	Jefferson	Stream ID:	E-13
City	Louisville	Date:	7/31/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	3
2. Embeddedness	(0-20)	3
3. Velocity/Depth Regime	(0-20)	3
4. Sediment Deposition	(0-20)	8
5. Channel Flow Status	(0-20)	13
6. Channel Alteration	(0-20)	18
7. Frequency of Riffles (Bends)	(0-20)	13
8a. Bank stability (Lt Bnk)	(0-10)	8
8b. Bank stability (Rt Bnk)	(0-10)	8
9a. Veg. Protection (Lt Bnk)	(0-10)	7
9b. Veg. Protection (Rt Bnk)	(0-10)	7
10a. Riparian Width (Lt Bnk)	(0-10)	10
10b. Riparian Width (Rt Bnk)	(0-10)	10
	Total Habitat Score:	111

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	4.0
Flow Regime:	Ephemeral	Depth (ft):	1.0
Channel is:	Natural	Lat:	38.17945
Water is:	Clear	Long:	-85.87768
Investigators:	Jared Edwards, Brian Fox	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-24
County:	Jefferson	Stream ID:	E-16
City	Louisville	Date:	7/31/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	8
2. Embeddedness	(0-20)	13
3. Velocity/Depth Regime	(0-20)	3
4. Sediment Deposition	(0-20)	8
5. Channel Flow Status	(0-20)	18
6. Channel Alteration	(0-20)	8
7. Frequency of Riffles (Bends)	(0-20)	13
8a. Bank stability (Lt Bnk)	(0-10)	8
8b. Bank stability (Rt Bnk)	(0-10)	8
9a. Veg. Protection (Lt Bnk)	(0-10)	8
9b. Veg. Protection (Rt Bnk)	(0-10)	8
10a. Riparian Width (Lt Bnk)	(0-10)	10
10b. Riparian Width (Rt Bnk)	(0-10)	5
Total Habitat Score:		**118**

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	10.0
Flow Regime:	Ephemeral	Depth (ft):	3.0
Channel is:	Artificial	Lat:	38.18021
Water is:	Absent	Long:	-85.88430
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-25
County:	Jefferson	Stream ID:	E-1a
City	Louisville	Date:	8/13/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	3
2. Embeddedness	(0-20)	3
3. Velocity/Depth Regime	(0-20)	3
4. Sediment Deposition	(0-20)	8
5. Channel Flow Status	(0-20)	2
6. Channel Alteration	(0-20)	3
7. Frequency of Riffles (Bends)	(0-20)	3
8a. Bank stability (Lt Bnk)	(0-10)	8
8b. Bank stability (Rt Bnk)	(0-10)	8
9a. Veg. Protection (Lt Bnk)	(0-10)	9
9b. Veg. Protection (Rt Bnk)	(0-10)	9
10a. Riparian Width (Lt Bnk)	(0-10)	1
10b. Riparian Width (Rt Bnk)	(0-10)	2
Total Habitat Score:		62

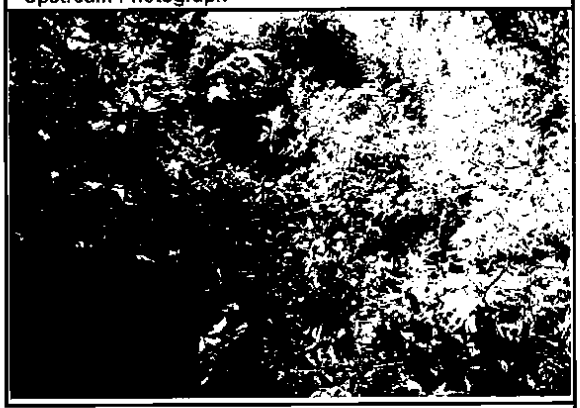
Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	10.0
Flow Regime:	Ephemeral	Depth (ft):	3.0
Channel is:	Artificial	Lat:	38.18194
Water is:	Absent	Long:	-85.88408
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-26
County:	Jefferson	Stream ID:	E-3
City	Louisville	Date:	8/13/2009

Upstream Photograph



RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	3
2. Embeddedness	(0-20)	3
3. Velocity/Depth Regime	(0-20)	3
4. Sediment Deposition	(0-20)	8
5. Channel Flow Status	(0-20)	2
6. Channel Alteration	(0-20)	3
7. Frequency of Riffles (Bends)	(0-20)	3
8a. Bank stability (Lt Bnk)	(0-10)	8
8b. Bank stability (Rt Bnk)	(0-10)	8
9a. Veg. Protection (Lt Bnk)	(0-10)	9
9b. Veg. Protection (Rt Bnk)	(0-10)	9
10a. Riparian Width (Lt Bnk)	(0-10)	1
10b. Riparian Width (Rt Bnk)	(0-10)	2
Total Habitat Score:		62

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	4.0
Flow Regime:	Ephemeral	Depth (ft):	1.0
Channel is:	Manipulated	Lat:	38.18320
Water is:	Absent	Long:	-85.87966
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (µmhos):	n/a
Comments:			

State:	KY	Station ID:	RBP-27
County:	Jefferson	Stream ID:	E-38
City	Louisville	Date:	8/13/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	3
2. Embeddedness	(0-20)	3
3. Velocity/Depth Regime	(0-20)	2
4. Sediment Deposition	(0-20)	5
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	7
7. Frequency of Riffles (Bends)	(0-20)	3
8a. Bank stability (Lt Bnk)	(0-10)	6
8b. Bank stability (Rt Bnk)	(0-10)	6
9a. Veg. Protection (Lt Bnk)	(0-10)	5
9b. Veg. Protection (Rt Bnk)	(0-10)	5
10a. Riparian Width (Lt Bnk)	(0-10)	8
10b. Riparian Width (Rt Bnk)	(0-10)	8
Total Habitat Score:		61

Downstream Photograph

RBP Habitat Assessment - Low Gradient Stream

Project:	Cane Run Landfill		
Project Owner:	E-ON/LG&E		
HUC_14:	05140101320050	Mill Creek Cutoff	
HUC_10:	051410101320	Beargrass Creek	
HUC_8:	05140101	Salt River	
Stream Name:	UT to Mill Creek Cutoff	Width (ft):	4.0
Flow Regime:	Ephemeral	Depth (ft):	1.0
Channel is:	Natural	Lat:	38.18529
Water is:	Absent	Long:	-85.87685
Investigators:	Jared Edwards, Rita Davis	Temp (°F)	n/a
		pH	n/a
		Cond (umhos)	n/a
Comments:			

State:	KY	Station ID:	RBP-28
County:	Jefferson	Stream ID:	E-34
City	Louisville	Date:	8/13/2009

Upstream Photograph

RBP Habitat Parameters	Units	Score
1. Epifaunal Substrate	(0-20)	2
2. Embeddedness	(0-20)	3
3. Velocity/Depth Regime	(0-20)	2
4. Sediment Deposition	(0-20)	8
5. Channel Flow Status	(0-20)	0
6. Channel Alteration	(0-20)	5
7. Frequency of Riffles (Bends)	(0-20)	3
8a. Bank stability (Lt Bnk)	(0-10)	5
8b. Bank stability (Rt Bnk)	(0-10)	5
9a. Veg. Protection (Lt Bnk)	(0-10)	4
9b. Veg. Protection (Rt Bnk)	(0-10)	4
10a. Riparian Width (Lt Bnk)	(0-10)	4
10b. Riparian Width (Rt Bnk)	(0-10)	4
	Total Habitat Score:	49

Downstream Photograph

Wetland Delineation Data Sheets

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-1	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO
Is this Sampling Point Within a Wetland?	**NO**

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Rubus allegheniensis*	SHRUB	FACU-	9.	*Prenanthes altissima*	HERB	FACU-
2	*Sambucus canadensis*	HERB	FACW-	10			
3	*Schedonorus phoenix*	HERB	FACU	11			
4	*Vitis sp.*	VINE		12.			
5	*Lonicera japonica*	VINE	FAC-	13			
6	*Sorghum halepense*	HERB	FACU	14			
7	*Toxicodendron radicans*	HERB	FAC	15			
8	*Ambrosia artemisiifolia*	HERB	FACU	16.			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 25%

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake or Tide Gauge:	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
X	None			Other:	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Wheeling Loam — Drainage Class: Well Drained

Taxonomy: Fine-loamy, mixed, active, mesic Ultic Hapludalfs — Field Observations Confirm Mapped Type?

Depth (In.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-8"		10YR4/4		Silt Loam
8-16"		10YR4/6		Silt Loam

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-2	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	PEM1A
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES
Is this Sampling Point Within a Wetland?	YES

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Phalaris arundinacea*	HERB	FACW+	9	*Juncus tenuis*	HERB	FAC-
2	*Sambucus canadensis*	HERB	FACW-	10			
3	*Leersia oryzoides*	HERB	OBL	11			
4	*Eleochans obtusa*	HERB	OBL	12			
5	*Liquidambar styraciflua*	SAPLING	FAC	13			
6	*Juncus effusus*	HERB	FACW+	14			
7	*Scirpus atrovirens*	HERB	OBL	15			
8	*Carex vulpinoidea*	HERB	OBL	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 89%

Remarks:

Hydrophytic Vegetation Present? YES

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated	X	Oxidized Root Channels in Upper 12 in	Depth of Surface Water:	N/O
X	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
X	Drainage Patterns in Wetlands		None	Aerial Photographs	N/A
	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? YES

SOILS

Map Unit Name: Weinbach Silt Loam — Drainage Class: Somewhat Poorly Drained

Taxonomy: Fine-silty, mixed, active, mesic Aeric Fragiaqualfs — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR5/2	10YR4/6 (many/distinct)	Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-3	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES
Is this Sampling Point Within a Wetland?	**YES**

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Phalaris arundinacea*	HERB	FACW+	9.			
2	*Sambucus canadensis*	HERB	FACW-	10.			
3	*Schedonorus phoenix*	HERB	FACU	11.			
4	*Eleocharis obtusa*	HERB	OBL	12.			
5	*Mentha spicata*	HERB	FACW+	13.			
6	*Juncus effusus*	HERB	FACW+	14.			
7	*Carex vulinoidea*	HERB	OBL	15.			
8.				16.			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 86%

Remarks:

Hydrophytic Vegetation Present? YES

HYDROLOGY

	Primary Indicators		Secondary Indicators (2 or more required)	Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
X	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge	N/A
	Drainage Patterns in Wetlands		None	Aerial Photographs:	N/A
	None			Other :	N/A

Remarks:

Wetland Hydrology Present or Indicated? YES

SOILS

Map Unit Name: Weinbach Silt Loam — Drainage Class: Somewhat Poorly Drained

Taxonomy: Fine-silty, mixed, active, mesic Aeric Fragiaqualfs — Field Observations Confirm Mapped Type?

Depth (In.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-12"		10YR4/2	10YR4/6 (small/distinct)	Silty Clay
12-15"		10YR4/2	10YR4/4 (large/distinct)	Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-4	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO

Is this Sampling Point Within a Wetland? NO

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Schedonorus phoenix*	HERB	FACU	9			
2	*Setaria faberi*	HERB	UPL	10.			
3	*Lonicera japonica*	VINE	FAC-	11.			
4	*Sorghum halepense*	HERB	FACU	12			
5				13			
6				14.			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 0%

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
X	None			Other:	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Weinbach Silt Loam — Drainage Class: Somewhat Poorly Drained

Taxonomy: Fine-silty, mixed, active, mesic Aeric Fragiaqualfs — Field Observations Confirm Mapped Type?:

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-8"		10YR4/3	10YR4/4 (few/faint)	Silt Loam
8-16"		10YR4/4		Silt Loam

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID	WAS-5	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date: 7/21/09	
Owner:	E-ON/LG&E	County: Jefferson	
Investigator:	Brian Fox, Rita Davis	State: Kentucky	

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES

Is this Sampling Point Within a Wetland? YES

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Mentha spicata*	HERB	FACW+	9			
2	*Juncus effusus*	HERB	FACW+	10.			
3	*Juncus tenuis*	HERB	FAC-	11			
4	*Scirpus atrovirens*	HERB	OBL	12.			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 75%

Remarks:

Hydrophytic Vegetation Present? YES

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated	X	Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
X	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands		None	Aerial Photographs:	N/A
	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? YES

SOILS

Map Unit Name: Weinbach Silt Loam — Drainage Class: Somewhat Poorly Drained

Taxonomy: Fine-silty, mixed, active, mesic Aeric Fragiaqualfs — Field Observations Confirm Mapped Type?

Depth (In.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR5/2	10YR4/6 (many/distinct)	Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-6	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO
Is this Sampling Point Within a Wetland?	**NO**

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Vitus sp.*	VINE		9	*Trifolium pratense*	HERB	FACU-
2	*Schedonorus phoenix*	HERB	FACU	10	*Solidago altissima*	HERB	FACU-
3	*Lonicera japonica*	VINE	FAC-	11			
4	*Sorghum halepense*	HERB	FACU	12			
5	*Dactylis glomerata*	HERB	FACU	13			
6	*Ambrosia artemisiifolia*	HERB	FACU	14			
7	*Prenanthes altissima*	HERB	FACU-	15			
8	*Campsis radicans*	HERB	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 11%

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs	N/A
X	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Weinbach Silt Loam — Drainage Class: Somewhat Poorly Drained

Taxonomy: Fine-silty, mixed, active, mesic Aeric Fragiaqualfs — Field Observations Confirm Mapped Type?:

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR4/4		Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-7	Transect ID:	
Location	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES
Is this Sampling Point Within a Wetland?	**YES**

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Bidens frondosa*	HERB	FACW	9			
2	*Sambucus canadensis*	HERB	FACW-	10			
3	*Eleochans obtusa*	HERB	OBL	11			
4	*Juncus effusus*	HERB	FACW+	12			
5	*Juncus tenuis*	HERB	FAC-	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): **80%**

Remarks:

Hydrophytic Vegetation Present? **YES**

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water:	N/O
X	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
	None			Other :	N/A

Remarks:

Wetland Hydrology Present or Indicated? **YES**

SOILS

Map Unit Name: Weinbach Silt Loam — Drainage Class: Somewhat Poorly Drained

Taxonomy: Fine-silty, mixed, active, mesic Aeric Fragiaqualfs — Field Observations Confirm Mapped Type?:

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-10"		10YR4/2	10YR4/6 (many/distinct)	Silty Clay
10-16"		10YR4/3	10YR4/6 (many/distinct)	

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

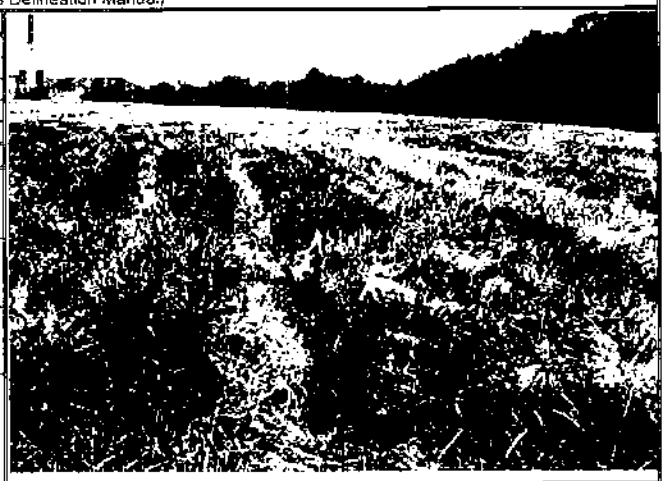
Hydric Soils Present? **YES**

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-8	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky



WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO

Is this Sampling Point Within a Wetland? NO

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Apocynum cannabinum*	HERB	FAC	9			
2	*Schedonorus phoenix*	HERB	FACU	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): **50%**

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

	Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in		Depth of Surface Water	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves		Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data		Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test		**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)		Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands	X	None		Aerial Photographs:	N/A
X	None				Other:	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Weinbach Silt Loam — Drainage Class: Somewhat Poorly Drained

Taxonomy: Fine-silty, mixed, active, mesic Aeric Fragiaqualfs — Field Observations Confirm Mapped Type?:

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR4/4		Silty Loam

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-9	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES
Is this Sampling Point Within a Wetland?	YES

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Polygonum pensylvanicum*	HERB	FACW	9			
2	*Schedonorus phoenix*	HERB	FACU	10			
3	*Ambrosia artemisiifolia*	HERB	FACU	11			
4	*Juncus effusus*	HERB	FACW+	12			
5	*Polygonum pensylvanicum*	HERB	FACW	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): **60%**

Remarks:

Hydrophytic Vegetation Present? **YES**

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
X	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
	None			Other :	N/A

Remarks:

Wetland Hydrology Present or Indicated? **YES**

SOILS

Map Unit Name: Wheeling Loam — Drainage Class: Well Drained

Taxonomy: Fine-loamy, mixed, active, mesic Ultic Hapludalfs — Field Observations Confirm Mapped Type?:

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR4/2	10YR4/6 (many/distinct)	Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? **YES**

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-10	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO
Is this Sampling Point Within a Wetland?	**NO**

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Apocynum cannabinum*	HERB	FAC	9			
2	*Schedonorus phoenix*	HERB	FACU	10			
3.	*Lonicera japonica*	VINE	FAC-	11			
4.	*Sorghum halepense*	HERB	FACU	12			
5.	*Prenanthes altissima*	HERB	FACU-	13			
6	*Campsis radicans*	HERB	FAC	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 33%

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

	Primary Indicators		Secondary Indicators (2 or more required)	Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs	N/A
X	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Wheeling Loam — Drainage Class: Well Drained

Taxonomy: Fine-loamy, mixed, active, mesic Ultic Hapludalfs — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR4/4		Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-11	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES

Is this Sampling Point Within a Wetland? YES

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Scirpus cyperinus*	HERB	FACW+	9.			
2	*Eleocharis obtusa*	HERB	OBL	10			
3	*Acer rubrum*	SAPLING	FAC	11			
4	*Cyperus strigosus*	HERB	FACW	12.			
5	*Juncus effusus*	HERB	FACW+	13			
6	*Polygonum pensylvanicum*	HERB	FACW	14			
7.				15			
8.				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

Hydrophytic Vegetation Present? YES

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels In Upper 12 In	Depth of Surface Water	N/O
X	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water In Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge	N/A
	Drainage Patterns In Wetlands	X	None	Aerial Photographs:	N/A
	None			Other:	N/A

Remarks:

Wetland Hydrology Present or Indicated? YES

SOILS

Map Unit Name: Urban Land-Alfic Udorant-Wheeling Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR5/2	10YR4/6 (many/distinct)	Silty Clay

Hydric Soil Indicators:

		Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
		Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
		Sulfidic Odor		Concretions		Other (Explain in Remarks)
		Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-12	Transect ID	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date: 7/21/09	
Owner:	E-ON/LG&E	County: Jefferson	
Investigator:	Brian Fox, Rita Davis	State: Kentucky	

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO

Is this Sampling Point Within a Wetland? NO

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Apocynum cannabinum*	HERB	FAC	9			
2	*Schedonorus phoenix*	HERB	FACU	10.			
3	*Erigeron philadephicus*	HERB	FACU	11.			
4	*Veronia gigantea*	HERB	FAC	12.			
5	*Lonicera japonica*	VINE	FAC-	13.			
6	*Prenanthes altissima*	HERB	FACU-	14			
7	*Juncus tenuis*	HERB	FAC-	15			
8				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 33%

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

	Primary Indicators		Secondary Indicators (2 or more required)
	Inundated		Oxidized Root Channels in Upper 12 in
	Saturated in Upper 12 Inches		Water-Stained Leaves
	Water Marks		Local Soil Survey Data
	Drift Lines		FAC-Neutral Test
	Sediment Deposits		Other (explain in Remarks)
	Drainage Patterns in Wetlands	X	None
X	None		

Field Observations:	
Depth of Surface Water:	N/O
Depth to Water in Pit:	N/O
Depth to Saturated Soil:	N/O
Recorded Data (Describe in Remarks)?	
Stream, Lake, or Tide Gauge:	N/A
Aerial Photographs:	N/A
Other:	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Urban Land-Alfic Udorant-Wheeling Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR5/3		

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-13	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO

Is this Sampling Point Within a Wetland? NO

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Apocynum cannabinum*	HERB	FAC	9.			
2	*Schedonorus phoenix*	HERB	FACU	10.			
3	*Vernonia gigantea*	HERB	FAC	11.			
4	*Sorghum halepense*	HERB	FACU	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) **50%**

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

	Primary Indicators		Secondary Indicators (2 or more required)
	Inundated		Oxidized Root Channels in Upper 12 in
	Saturated in Upper 12 Inches		Water-Stained Leaves
	Water Marks		Local Soil Survey Data
	Drift Lines		FAC-Neutral Test
	Sediment Deposits		Other (explain in Remarks)
	Drainage Patterns in Wetlands	X	None
X	None		

Field Observations:

Depth of Surface Water:	N/O
Depth to Water in Pit:	N/O
Depth to Saturated Soil	N/O
Recorded Data (Describe in Remarks)?	
Stream, Lake, or Tide Gauge:	N/A
Aerial Photographs:	N/A
Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Urban Land-Alfic Udorant-Wheeling Complex — Drainage Class:

Taxonomy — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR5/3		Silty Sand

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-14	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO
Is this Sampling Point Within a Wetland?	NO

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Apocynum cannabinum*	HERB	FAC	9.			
2	*Schedonorus phoenix*	HERB	FACU	10			
3	*Setaria faberi*	HERB	UPL	11			
4	*Sorghum halepense*	HERB	FACU	12			
5.	*Bidens frondosa*	HERB	FACW	13			
6	*Ambrosia artemisiifolia*	HERB	FACU	14			
7	*Prenanthes altissima*	HERB	FACU-	15			
8.				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): **29%**

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

	Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in		Depth of Surface Water	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves		Depth to Water in Pit	N/O
	Water Marks		Local Soil Survey Data		Depth to Saturated Soil	N/O
	Drift Lines		FAC-Neutral Test		**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)		Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands	X	None		Aerial Photographs:	N/A
X	None				Other:	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Urban Land-Alfic Udorant-Wheeling Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (In.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-12"		10YR4/4		Silt Loam
12-16"		10YR4/6		Silt Loam

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-15	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO

Is this Sampling Point Within a Wetland? NO

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Dioscorea oppositifolia*	VINE	NL	9.			
2	*Schedonorus phoenix*	HERB	FACU	10.			
3	*Prenanthes altissima*	HERB	FACU-	11			
4.				12			
5				13			
6				14			
7				15			
8				16.			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0%

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water:	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
X	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Urban Land-Affic Udorant-Wheeling Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR5/3		Silty Sand

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-16	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date: 7/21/09	
Owner	E-ON/LG&E	County: Jefferson	
Investigator:	Brian Fox, Rita Davis	State: Kentucky	

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO

Is this Sampling Point Within a Wetland? NO

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Schedonorus phoenix*	HERB	FACU	9			
2	*Setaria faberi*	HERB	UPL	10			
3	*Sorghum halepense*	HERB	FACU	11			
4	*Dactylis glomerata*	HERB	FACU	12			
5.	*Ambrosia artemisiifolia*	HERB	FACU	13			
6	*Prenanthes altissima*	HERB	FACU-	14			
7				15			
8.				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 0%

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels In Upper 12 in	Depth of Surface Water:	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns In Wetlands	X	None	Aerial Photographs	N/A
X	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?:

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR5/3		0

Hydric Soil Indicators:

		Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
		Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
		Sulfidic Odor		Concretions		Other (Explain in Remarks)
		Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-17	Transect ID	
Location	Proposed Landfill Area	Community ID	
Project/Site	Cane Run Landfill Project	Date: 7/21/09	
Owner	E-ON/LG&E	County: Jefferson	
Investigator	Brian Fox, Rita Davis	State: Kentucky	

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES
Is this Sampling Point Within a Wetland?	**YES**

Remarks:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Scirpus cyperinus*	HERB	FACW	9.		
2. *Eleocharis obtusa*	HERB	OBL	10.		
3. *Mentha spicata*	HERB	FACW	11.		
4. *Cyperus strigosus*	HERB	FACW	12.		
5. *Juncus effusus*	HERB	FACW+	13.		
6. *Juncus tenuis*	HERB	FAC-	14.		
7. *Polygonum pensylvanicum*	HERB	FACW	15.		
8. *Rumex crispus*	HERB	FACU	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 75%

Remarks:

Hydrophytic Vegetation Present? YES

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
X	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water:	N/O
X	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? YES

SOILS

Map Unit Name: Urban Land-Allic Udorant-Wheeling Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR4/2	10YR4/6 (many/distinct	Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-18	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO

Is this Sampling Point Within a Wetland? NO

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Dioscorea oppositifolia*	VINE	NL	9			
2	*Schedonorus phoenix*	HERB	FACU	10			
3	*Lonicera japonica*	VINE	FAC-	11.			
4	*Sorghum halepense*	HERB	FACU	12.			
5	*Bidens frondosa*	HERB	FACW	13.			
6	*Ambrosia artemisiifolia*	HERB	FACU	14.			
7	*Prenanthes altissima*	HERB	FACU-	15.			
8	*Rumex crispus*	HERB	FACU	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): **14%**

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water:	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
X	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Urban Land-Alfic Udorant-Wheeling Complex — Drainage Class:

Taxonomy — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR4/4		Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-19	Transect ID	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/21/09
Owner	E-ON/LG&E	County	Jefferson
Investigator:	Brian Fox, Rita Davis	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES

Is this Sampling Point Within a Wetland? YES

Remarks:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Cinna arundinacea*	HERB	FACW+	9. *Rumex crispus*	HERB	FACU
2. *Eleocharis obtusa*	HERB	OBL	10.		
3. *Mentha spicata*	HERB	FACW	11.		
4. *Cephalanthus occidentalis*	SHRUB	OBL	12.		
5. *Cyperus strigosus*	HERB	FACW	13.		
6. *Juncus effusus*	HERB	FACW+	14.		
7. *Juncus tenuis*	HERB	FAC-	15.		
8. *Polygonum pensylvanicum*	HERB	FACW	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 78%

Remarks:

Hydrophytic Vegetation Present? YES

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit	N/O
X	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? YES

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy — Field Observations Confirm Mapped Type?

Depth (In.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR4/2	10YR4/6 (many/distinct	Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-20	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date: 7/28/09	
Owner:	E-ON/LG&E	County: Jefferson	
Investigator:	Brian Fox, Jared Edwards	State: Kentucky	

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES

Is this Sampling Point Within a Wetland? YES

Remarks:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Acer rubrum*	TREE	FAC	9		
2. *Carex frankii*	HERB	OBL	10		
3. *Polygonum hydropiperoides*	HERB	OBL	11		
4. *Sambucus canadensis*	SHRUB	FACW-	12		
5. *Ulmus americana*	TREE	FACW-	13		
6. *Aster dumosis*	HERB	FAC	14		
7. *Acer negundo*	TREE	FAC+	15		
8.			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100%

Remarks:

Hydrophytic Vegetation Present? YES

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water:	N/O
	Saturated in Upper 12 Inches	X	Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil	N/O
X	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands		None	Aerial Photographs:	N/A
	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? YES

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-2"		Organic Material		Organic Material
2-7"		10YR4/2	10YR6/2 (Many/Distinct)	Silty Clay
7-12"		10YR4/4		Sandy Loam

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor	X	Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-21	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/28/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Jared Edwards	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO

Is this Sampling Point Within a Wetland? NO

Remarks:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 *Acer rubrum*	TREE	FAC	9. *Rubus allegheniensis*	SHRUB	FACU-
2 *Lonicera japonica*	VINE	FAC-	10 *Phytolacca americana*	HERB	FACU+
3 *Polygonum hydropiperoides*	HERB	OBL	11. *Ageratina altissima*	HERB	FACU-
4 *Sambucus canadensis*	SHRUB	FACW-	12.		
5 *Lonicera maackii*	SHRUB		13		
6 *Fraxinus americana*	HERB	FACU	14		
7 *Acer negundo*	TREE	FAC+	15		
8 *Robinia pseudoacacia*	TREE	FACU-	16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): **40%**

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water:	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
X	None			Other:	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-14"		10YR4/6		Clay loam

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-22	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site	Cane Run Landfill Project	Date:	7/28/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator	Brian Fox, Jared Edwards	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES

Is this Sampling Point Within a Wetland? YES

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Acer rubrum*	TREE	FAC	9			
2	*Acer negundo*	TREE	FAC+	10.			
3				11.			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100%

Remarks:

Hydrophytic Vegetation Present? YES

HYDROLOGY

	Primary Indicators		Secondary Indicators (2 or more required)	Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 In	Depth of Surface Water	N/O
	Saturated in Upper 12 Inches	X	Water-Stained Leaves	Depth to Water in Pit	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil	N/O
X	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe In Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands		None	Aerial Photographs:	N/A
	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? YES

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (In.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-2"		Organic Material		Organic Material
2-5"		10YR5/2	10YR4/6 (Many/Faint)	Silty Clay
5-12"		10YR4/4		Silt loam

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor	X	Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

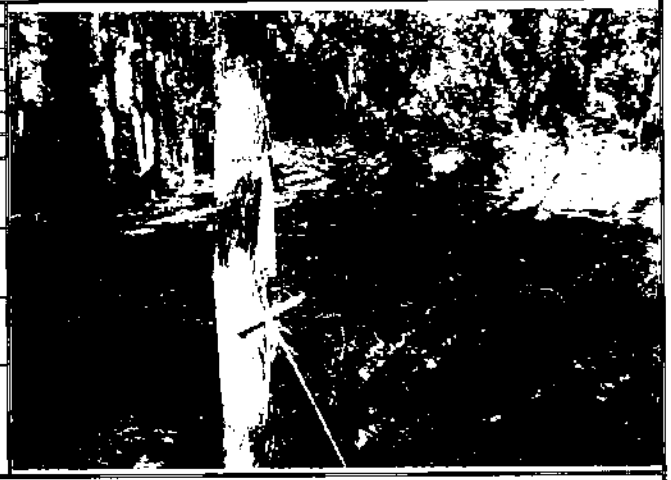
Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID	WAS-23	Transect ID	
Location	Proposed Landfill Area	Community ID	
Project/Site:	Cane Run Landfill Project	Date: 7/28/09	
Owner:	E-ON/LG&E	County: Jefferson	
Investigator:	Brian Fox, Jared Edwards	State: Kentucky	



WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES
Is this Sampling Point Within a Wetland?	**YES**

Remarks:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Impatiens capensis*	HERB	FACW	9. *Ulmus americana*	TREE	FACW-
2. *Toxicodendron radicans*	HERB	FAC	10. *Lysimachia nummulana*	HERB	OBL
3. *Boehmeria cylindrica*	HERB	FACW+	11.		
4. *Polygonum hydripiperoides*	HERB	OBL	12.		
5. *Polygonum pensylvanicum*	HERB	FACW	13		
6. *Acer rubrum*	TREE	FAC	14		
7. *Quercus rubra*	TREE	FACU-	15		
8. *Liquidambar styraciflua*	TREE	FAC	16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) **90%**

Remarks:

Hydrophytic Vegetation Present? **YES**

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water:	N/O
	Saturated in Upper 12 Inches	X	Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
X	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake or Tide Gauge:	N/A
X	Drainage Patterns in Wetlands		None	Aerial Photographs:	N/A
	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? **YES**

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (In.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-2"		Organic Material		Organic Material
2-16"		10YR5/1	10YR4/6 (Many/Distinct)	Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

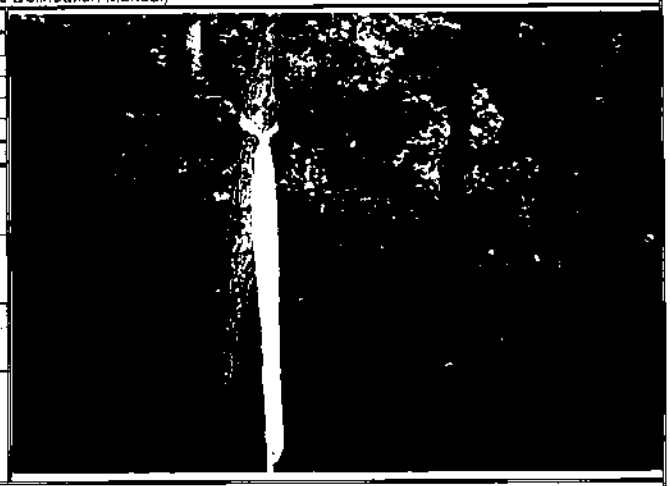
Hydric Soils Present? **YES**

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID	WAS-24	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/28/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Jared Edwards	State:	Kentucky



WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	YES

Is this Sampling Point Within a Wetland? NO

Remarks:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Acer rubrum*	TREE	FAC	9. *Toxicodendron radicans*	VINE	FAC
2. *Lonicera japonica*	VINE	FAC-	10.		
3. *Rubus allegheniensis*	SHRUB	FACU-	11.		
4. *Ageratina altissima*	HERB	FACU-	12.		
5. *Fraxinus americana*	HERB	FACU	13.		
6. *Liquidambar styraciflua*	TREE	FAC	14.		
7. *Impatiens capensis*	HERB	FACW	15.		
8. *Parthenocissus quinquefolia*	VINE	FACU	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): **44%**

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water:	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
X	None			Other:	N/A

Remarks:

Wetland Hydrology Present or indicated? NO

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-1"				Organic Material
1-4"		10YR4/4		Silty Loam
4-12"		10YR4/6		Silty Loam
12-16"		10YR6/2	10YR4/6 (many, distinct)	Silty Loam

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID	WAS-25	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date: 7/28/09	
Owner:	E-ON/LG&E	County: Jefferson	
Investigator:	Brian Fox, Jared Edwards	State: Kentucky	

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES

Is this Sampling Point Within a Wetland? YES

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Carex gravi*	HERB	FACW+	9.	*Liquidambar styraciflua*	TREE	FAC
2	*Toxicodendron radicans*	HERB	FAC	10	*Ulmus americana*	TREE	FACW-
3	*Boehmeria cylindrica*	HERB	FACW+	11.			
4	*Fraxinus pennsyvanica*	HERB	FACW	12			
5	*Aster dumosus*	HERB	FAC	13			
6	*Campsis radicans*	VINE	FAC	14			
7	*Acer rubrum*	TREE	FAC	15			
8	*Populus deltoides*	TREE	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) **100%**

Remarks:

Hydrophytic Vegetation Present? YES

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
X	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands		None	Aerial Photographs:	N/A
	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? YES

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR4/4		

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-26	Transect ID:	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/28/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Jared Edwards	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES

Is this Sampling Point Within a Wetland? YES

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1.	*Typha latifolia*	HERB	OBL	9.	*Toxicodendron radicans*	VINE	FAC
2.	*Gleditsia triacanthos*	TREE	FAC-	10.			
3.	*Juncus effusus*	HERB	FACW+	11.			
4.	*Populus deltoides*	TREE	FAC	12.			
5.	*Acer rubrum*	TREE	FAC	13.			
6.	*Sambucus canadensis*	SHRUB	FACW-	14.			
7.	*Impatiens capensis*	HERB	FACW	15.			
8.	*Apocynum androsaemifolium*	HERB	-	16.			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 88%

Remarks:

Hydrophytic Vegetation Present? YES

HYDROLOGY

	Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
X	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
X	Saturated in Upper 12 inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge	N/A
	Drainage Patterns in Wetlands		None	Aerial Photographs:	N/A
	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? YES

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy — Field Observations Confirm Mapped Type?:

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-16"		10YR6/2	10YR4/6	

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-27	Transect ID	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date:	7/28/09
Owner:	E-ON/LG&E	County:	Jefferson
Investigator:	Brian Fox, Jared Edwards	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES

Is this Sampling Point Within a Wetland? YES

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1.	*Impatiens capensis*	HERB	FACW	9.			
2.	*Toxicodendron radicans*	VINE	FAC	10.			
3.	*Leersia oryzoides*	HERB	OBL	11.			
4.	*Ageratina altissima*	HERB	FACU-	12.			
5.	*Polygonum pensylvanicum*	HERB	FACW	13.			
6.	*Fraxinus pennsylvanica*	TREE	FACW	14.			
7.	*Boehmeria cylindrica*	HERB	FACW+	15.			
8.	*Lysimachia nummularia*	HERB	OBL	16.			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 88%

Remarks:

Hydrophytic Vegetation Present? YES

HYDROLOGY

	Primary Indicators		Secondary Indicators (2 or more required)
X	Inundated		Oxidized Root Channels in Upper 12 in
X	Saturated in Upper 12 Inches		Water-Stained Leaves
	Water Marks		Local Soil Survey Data
	Drift Lines		FAC-Neutral Test
	Sediment Deposits		Other (explain in Remarks)
	Drainage Patterns in Wetlands		None
	None		

Field Observations:	
Depth of Surface Water	N/O
Depth to Water in Pit:	N/O
Depth to Saturated Soil	N/O
Recorded Data (Describe in Remarks)?	
Stream, Lake, or Tide Gauge:	N/A
Aerial Photographs:	N/A
Other :	N/A

Remarks:

Wetland Hydrology Present or Indicated? YES

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-8"		10YR4/4		Silty Clay
8-16"		10YR6/1	10YR4/6	Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-28	Transect ID	
Location:	Proposed Landfill Area	Community ID	
Project/Site:	Cane Run Landfill Project	Date: 7/28/09	
Owner:	E-ON/LG&E	County: Jefferson	
Investigator:	Brian Fox, Jared Edwards	State: Kentucky	

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	YES

Is this Sampling Point Within a Wetland? NO

Remarks:

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Ageratina altissima*	HERB	FACU-	9.	*Diospyros virginiana*	SHRUB	FAC-
2	*Lonicera japonica*	VINE	FAC-	10			
3	*Parthenocissus quinquefolia*	VINE	FACU	11			
4	*Lonicera maackii*	VINE	FACU	12			
5	*Toxicodendron radicans*	VINE	FAC	13			
6	*Acer saccharum*	TREE	FACU-	14			
7	*Ulmus americana*	TREE	FACW-	15			
8	*Ligustrum sempervirens*	SHRUB		16.			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) **29%**

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit.	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake or Tide Gauge:	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
X	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?:

Depth (in.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-8"		10YR5/4		Silty Clay
8-12"		10YR7/1	10YR6/6 (many, distinct)	Silty Clay
12-24"		10YR6/1	10YR6/6 (many, distinct)	Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? YES

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-29	Transect ID	
Location:	Proposed Landfill Area	Community ID	
Project/Site:	Cane Run Landfill Project	Date	8/13/2009
Owner:	E-ON/LG&E	County	Jefferson
Investigator:	Rita Davis, Jared Edwards	State:	Kentucky

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	YES
Wetland Hydrology Present?	YES
Hydric Soils Present?	YES
Is this Sampling Point Within a Wetland?	**YES**

Remarks:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Equisetum hyemale*	HERB	FACW	9.		
2. *Lonicera japonica*	VINE	FAC-	10		
3. *Sassafras albidum*	SHRUB	FACU-	11		
4. *Lonicera maackii*	SHRUB		12		
5. *Acer saccharinum*	TREE	FACW	13		
6. *Liquidambar styraciflua*	TREE	FAC	14.		
7. *Boehmeria cylindrica*	HERB	FACW+	15		
8. *Lysimachia nummulana*	HERB	OBL	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) **71%**

Remarks:

Hydrophytic Vegetation Present? **YES**

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water	N/O
X	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands		None	Aerial Photographs:	N/A
	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? **YES**

SOILS

Map Unit Name: Urban Land - Udorthent Complex — Drainage Class:

Taxonomy: — Field Observations Confirm Mapped Type?

Depth (In.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-3"		10YR3/1	10YR4/6 (many, faint)	Silty Clay
3-10"		10YR3/1	10YR5/8 (many, distinct)	Silty Clay
10-18"		10YR4/1		Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon	X	Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils		None

Remarks:

Hydric Soils Present? **YES**

ROUTINE WETLAND DETERMINATION DATA FORM

(1987 COE Wetlands Delineation Manual)

SAMPLING STATION INFORMATION

Plot ID:	WAS-30	Transect ID	
Location:	Proposed Landfill Area	Community ID:	
Project/Site:	Cane Run Landfill Project	Date: 8/13/09	
Owner	E-ON/LG&E	County: Jefferson	
Investigator:	Rita Davis, Jared Edwards	State: Kentucky	

WETLAND DETERMINATION

Do Normal Circumstances exist on the site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area?	NO
Hydrophytic Vegetation Present?	NO
Wetland Hydrology Present?	NO
Hydric Soils Present?	NO

Is this Sampling Point Within a Wetland? NO

Remarks:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Rubus allegheniensis*	SHRUB	FACU-	9.		
2. *Lonicera japonica*	VINE	FAC-	10		
3. *Liquidambar styraciflua*	TREE	FAC	11		
4. *Juniperus virginiana*	TREE	FACU	12		
5. *Robinia pseudoacacia*	TREE	FACU-	13		
6. *Solidago altissima*	HERB	FACU	14		
7.			15.		
8.			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 17%

Remarks:

Hydrophytic Vegetation Present? NO

HYDROLOGY

Primary Indicators		Secondary Indicators (2 or more required)		Field Observations:	
	Inundated		Oxidized Root Channels in Upper 12 in	Depth of Surface Water:	N/O
	Saturated in Upper 12 Inches		Water-Stained Leaves	Depth to Water in Pit:	N/O
	Water Marks		Local Soil Survey Data	Depth to Saturated Soil:	N/O
	Drift Lines		FAC-Neutral Test	**Recorded Data (Describe in Remarks)?**	
	Sediment Deposits		Other (explain in Remarks)	Stream, Lake, or Tide Gauge:	N/A
	Drainage Patterns in Wetlands	X	None	Aerial Photographs:	N/A
X	None			Other	N/A

Remarks:

Wetland Hydrology Present or Indicated? NO

SOILS

Map Unit Name: Urban Land - Udorthent Complex

Drainage Class:

Taxonomy:

Field Observations Confirm Mapped Type?

Depth (In.)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Abundance/Contrast)	Texture, Structure, Concretions, etc.
0-18"		10YR5/6		Silty Clay

Hydric Soil Indicators:

	Histosol		Reducing Conditions		Organic Streaking in Sandy Soils
	Histic Epipedon		Gleyed or Low-Chroma Colors		Listed on Local / National Hydric Soils List
	Sulfidic Odor		Concretions		Other (Explain in Remarks)
	Aquic Moisture Regime		High Organic Content in Surface of Sandy Soils	X	None

Remarks:

Hydric Soils Present? NO

Jurisdictional Determination Forms

i. Perennial Streams/Wetlands
ii. Intermittent Streams/Wetlands
iii. Ephermeral Streams/Wetlands
iv. Non-Jurisdictional Streams/Wetlands

i. Perennial Streams/Wetlands

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): 08/14/09

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Stephen Hall
Project Engineer
Stantec Consulting Services, Inc.
350 Missouri Ave., Suite 100
Jeffersonville, IN 47130

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District Office

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: The E.ON-US is proposing to expand their landfill facilities for the purpose of storing coal combustion by-product (CCB) produced at the Cane Run Power Station. The project is located within the Mill Creek Cutoff watershed in Louisville, KY (38.181° N, 85.883 ° W).

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: KY County/parish/borough: Jefferson City: Louisville
Center coordinates of site (lat/long in degree decimal format):
Lat. 38.181° N, Long. 85.883 W.
Universal Transverse Mercator: 16
Name of nearest waterbody: Mill Creek Cutoff
Identify (estimate) amount of waters in the review area:
Non-wetland waters: 4 stream sections; linear feet: 9,929 ft.; width (ft) and/or 9.888 acres.
Cowardin Class: Riverine Stream Flow: Perennial
Wetlands: 1 wetland 0.057 acres. Cowardin Class: PSS1 Scrub-shrub

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal:

Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Date(s): August 14, 2009

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site.

Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant. Attached: Wetland Analysis (WAS) Sheet, RBP sheet

☐ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☐ U.S. Geological Survey Hydrologic Atlas: .

☐ USGS NHD data.

☐ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: Lanesville Quad, 1:24,000.

☐ USDA Natural Resources Conservation Service Soil Survey. Citation:

☐ National wetlands inventory map(s). Cite name: .

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☐ Aerial (Name & Date): .
or ☒ Other (Name & Date):RBP Photos.

☐ Previous determination(s). File no. and date of response letter: .

☐ Other information (please specify): .

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory Project Manager
(REQUIRED)

S. Hall 11/9/09

Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
P-1	38.184475°	-85.880045°	Riverine	6,161 linear feet/ 8.486 acre	Non-section 10 non-tidal
P-2	38.180164°	-85.883238°	Riverine	1,455 linear feet/ 0.401 acre	Non-section 10 non-tidal
P-3	38.181654°	-85.879108°	Riverine	1,094 linear feet/ 0.301 acre	Non-section 10 non-tidal
P-4	38.182251°	-85.875217°	Riverine	1,219 linear feet/ 0.700 acre	Non-section 10 non-tidal
Wetland K	38.178134°	-85.87789°	PSS1	0.057 acre	Non-tidal wetland

ii. Intermittent Streams/Wetlands

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): 08/14/09

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Stephen Hall
Project Engineer
Stantec Consulting Services, Inc.
350 Missouri Ave., Suite 100
Jeffersonville, IN 47130

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District Office

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: The E.ON-US is proposing to expand their landfill facilities for the purpose of storing coal combustion by-product (CCB) produced at the Cane Run Power Station. The project is located within the Mill Creek Cutoff watershed in Louisville, KY (38.181° N, 85.883 ° W).

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: KY County/parish/borough: Jefferson City: Louisville
Center coordinates of site (lat/long in degree decimal format):
Lat. 38.181° N, Long. 85.883 W.
Universal Transverse Mercator: 16
Name of nearest waterbody: Mill Creek Cutoff
Identify (estimate) amount of waters in the review area:
Non-wetland waters: 3 stream sections; linear feet: 4,158 ft.; width (ft) and/or 0.320 acres.
Cowardin Class: Riverine Stream Flow: Intermittent
Wetlands: 2 wetlands 1.598 acres. Cowardin Class: PEM1/PFO1

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal:

Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): August 14, 2009

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant. Attached: Wetland Analysis (WAS) Sheet, RBP sheet

- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☐ U.S. Geological Survey Hydrologic Atlas: .

- ☐ USGS NHD data.
- ☐ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: Lanesville Quad, 1:24,000.

☐ USDA Natural Resources Conservation Service Soil Survey. Citation:

☐ National wetlands inventory map(s). Cite name: .

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☐ Aerial (Name & Date): .
or ☒ Other (Name & Date):RBP Photos.

☐ Previous determination(s). File no. and date of response letter: .

☐ Other information (please specify): .

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory Project Manager
(REQUIRED)

11/9/05
Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
I-1	38.18204°	-85.884476°	Riverine	1,467 linear feet/ 0.135 acre	Non-section 10 non-tidal
I-2	38.182686°	-85.881343°	Riverine	916 linear feet/0.063 acre	Non-section 10 non-tidal
I-3	38.186017°	-85.880045°	Riverine	1775 linear feet/ 0.122 acre	Non-section 10 non-tidal
Wetland A	38.179968°	-85.879848°	PEM1	1.505 acre	Non-tidal wetland
Wetland L	38.181983°	-85.884405°	PFO1	0.093 acre	Non-tidal wetland

iii. Ephermeral Streams/Wetlands

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): 08/14/09

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Stephen Hall
Project Engineer
Stantec Consulting Services, Inc.
350 Missouri Ave., Suite 100
Jeffersonville, IN 47130

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District Office

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: The E.ON-US is proposing to expand their landfill facilities for the purpose of storing coal combustion by-product (CCB) produced at the Cane Run Power Station. The project is located within the Mill Creek Cutoff watershed in Louisville, KY (38.181° N, 85.883 ° W).

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: KY County/parish/borough: Jefferson City: Louisville
Center coordinates of site (lat/long in degree decimal format):
Lat. 38.181° N, Long. 85.883 W.
Universal Transverse Mercator: 16
Name of nearest waterbody: Mill Creek Cutoff
Identify (estimate) amount of waters in the review area:
Non-wetland waters: 40 stream sections; linear feet: 9,638 ft.; width (ft) and/or 1.199 acres.
Cowardin Class: Riverine Stream Flow: Ephemeral
Wetlands: 3 wetlands 1.390 acres. Cowardin Class: PFO1 Forested

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal:

Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Date(s): August 14, 2009

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site.

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SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant. Attached: Wetland Analysis (WAS) Sheet, RBP sheet

☐ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☐ U.S. Geological Survey Hydrologic Atlas: .

☐ USGS NHD data.

☐ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: Lanesville Quad, 1:24,000.

☐ USDA Natural Resources Conservation Service Soil Survey. Citation:

☐ National wetlands inventory map(s). Cite name: .

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☐ Aerial (Name & Date): .

or ☒ Other (Name & Date):RBP Photos.

☐ Previous determination(s). File no. and date of response letter: .

☐ Other information (please specify): .

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory Project Manager
(REQUIRED)

11/9/09
Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
E-1a	38.180207°	-85.884296°	Riverine	846 linear feet/ 0.194 acre	Non-section 10 non-tidal
E-1	38.181668°	-85.884677°	Riverine	71 linear feet/ 0.016 acre	Non-section 10 non-tidal
E-2	38.181668°	-85.884677°	Riverine	57 linear feet/ 0.005 acre	Non-section 10 non-tidal
E-3	38.181974°	-85.884078°	Riverine	96 linear feet/ 0.022 acre	Non-section 10 non-tidal
E-4	38.181838°	-85.883035°	Riverine	543 linear feet/ 0.025 acre	Non-section 10 non-tidal
E-5	38.183566°	-85.883761°	Riverine	524 linear feet/ 0.024 acre	Non-section 10 non-tidal
E-6	38.183488°	-85.883853°	Riverine	32 linear feet/ 0.002 acre	Non-section 10 non-tidal
E-7	38.18173°	-85.88101°	Riverine	87 linear feet/ 0.016 acre	Non-section 10 non-tidal
E-8	38.182458°	-85.881819°	Riverine	96 linear feet/ 0.007 acre	Non-section 10 non-tidal
E-9	38.180807°	-85.880022°	Riverine	379 linear feet/ 0.044 acre	Non-section 10 non-tidal
E-10	38.181591°	-85.880542°	Riverine	413 linear feet/ 0.076 acre	Non-section 10 non-tidal
E-11	38.181063°	-85.879709°	Riverine	92 linear feet/ 0.013 acre	Non-section 10 non-tidal
E-12	38.180893°	-85.879386°	Riverine	402 linear feet/ 0.037 acre	Non-section 10 non-tidal
E-13	38.181017°	-85.879536°	Riverine	47 linear feet/ 0.002 acre	Non-section 10 non-tidal
E-14	38.180993°	-85.879391°	Riverine	59 linear feet/ 0.003 acre	Non-section 10 non-tidal
E-15	38.177877°	-85.877815°	Riverine	117 linear feet/ 0.005 acre	Non-section 10 non-tidal
E-16	38.180957°	-85.878511°	Riverine	974 linear feet/ 0.157 acre	Non-section 10 non-tidal
E-17	38.180499°	-85.878424°	Riverine	32 linear feet/ 0.002 acre	Non-section 10 non-tidal
E-18	38.180863°	-85.878296°	Riverine	525 linear feet/ 0.036 acre	Non-section 10 non-tidal
E-19	38.1862°	-85.879941°	Riverine	80 linear feet/ 0.011 acre	Non-section 10 non-tidal
E-20	38.186255°	-85.88061°	Riverine	240 linear feet/ 0.033 acre	Non-section 10 non-tidal

E-21	38.185786°	-85.881098°	Riverine	65 linear feet/ 0.009 acre	Non-section 10 non-tidal
E-22	38.185457°	-85.881526°	Riverine	104 linear feet/ 0.014 acre	Non-section 10 non-tidal
E-23	38.185092°	-85.882037°	Riverine	105 linear feet/ 0.014 acre	Non-section 10 non-tidal
E-24	38.184834°	-85.881626°	Riverine	42 linear feet/ 0.006 acre	Non-section 10 non-tidal
E-25	38.184725°	-85.88176°	Riverine	31 linear feet/ 0.004 acre	Non-section 10 non-tidal
E-26	38.183109°	-85.875742°	Riverine	181 linear feet/ 0.025 acre	Non-section 10 non-tidal
E-27	38.183738°	-85.876758°	Riverine	499 linear feet/ 0.069 acre	Non-section 10 non-tidal
E-28	38.183738°	-85.876888°	Riverine	51 linear feet/ 0.007 acre	Non-section 10 non-tidal
E-29	38.183544°	-85.876664°	Riverine	106 linear feet/ 0.015 acre	Non-section 10 non-tidal
E-30	38.183627°	-85.876371°	Riverine	84 linear feet/ 0.012 acre	Non-section 10 non-tidal
E-31	38.184282°	-85.87623°	Riverine	275 linear feet/ 0.076 acre	Non-section 10 non-tidal
E-32	38.184571°	-85.876127°	Riverine	205 linear feet/ 0.019 acre	Non-section 10 non-tidal
E-33	38.184731°	-85.876019°	Riverine	89 linear feet/ 0.008 acre	Non-section 10 non-tidal
E-34	38.185285°	-85.876848°	Riverine	475 linear feet/ 0.044 acre	Non-section 10 non-tidal
E-35	38.185125°	-85.876986°	Riverine	640 linear feet/ 0.059 acre	Non-section 10 non-tidal
E-36	38.183179°	-85.878409°	Riverine	403 linear feet/ 0.037 acre	Non-section 10 non-tidal
E-37	38.183111°	-85.878508°	Riverine	65 linear feet/ 0.005 acre	Non-section 10 non-tidal
E-38	38.182376°	-85.879696°	Riverine	471 linear feet/ 0.043 acre	Non-section 10 non-tidal
E-39	38.183304°	-85.879635°	Riverine	17 linear feet/ 0.002 acre	Non-section 10 non-tidal
E-40	38.182997°	-85.878353°	Riverine	20 linear feet/ 0.002 acre	Non-section 10 non-tidal
Wetland I	38.17864°	-85.87716°	PFO1	0.423 acre	Non-tidal wetland
Wetland J	38.17864°	-85.87716°	PFO1	0.793 acre	Non-tidal wetland
Wetland K	38.17864°	-85.87716°	PFO1	0.174 acre	Non-tidal wetland

iv. Non-Jurisdictional Streams/Wetlands

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): 08/14/09

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Stephen Hall
Project Engineer
Stantec Consulting Services, Inc.
350 Missouri Ave., Suite 100
Jeffersonville, IN 47130

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District Office

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: The E.ON-US is proposing to expand their landfill facilities for the purpose of storing coal combustion by-product (CCB) produced at the Cane Run Power Station. The project is located within the Mill Creek Cutoff watershed in Louisville, KY (38.181° N, 85.883 ° W).

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: KY County/parish/borough: Jefferson City: Louisville
Center coordinates of site (lat/long in degree decimal format):
Lat. 38.181° N, Long. 85.883 W.
Universal Transverse Mercator: 16
Name of nearest waterbody: Mill Creek Cutoff
Identify (estimate) amount of waters in the review area:
Non-wetland waters: 2 stream sections; linear feet: 1,154 ft.; width (ft) and/or N/A acres.
Cowardin Class: N/A Stream Flow: Non-Jurisdictional
Wetlands: 7 wetlands 0.375 acres. Cowardin Class: PEM1 Emergent

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal:

Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Date(s): August 14, 2009

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site.

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SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
Attached: Wetland Analysis (WAS) Sheet, RBP sheet

☐ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☐ U.S. Geological Survey Hydrologic Atlas: .

☐ USGS NHD data.

☐ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: Lanesville Quad, 1:24,000.

☐ USDA Natural Resources Conservation Service Soil Survey. Citation:

☐ National wetlands inventory map(s). Cite name: .

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☐ Photographs: ☐ Aerial (Name & Date): .

or ☐ Other (Name & Date): .

☐ Previous determination(s). File no. and date of response letter: .

☐ Other information (please specify): .

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

	11/9/09
Signature and date of Regulatory Project Manager (REQUIRED)	Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
NJ-1	38.181364°	-85.884319°	N/A	41 linear feet	Non-JD Stream
NJ-2	38.180049°	-85.879417°	N/A	1,113 linear feet	Non-JD Stream
Wetland B	38.178883°	-85.878426°	PEM1	0.135 acre	Non-JD Wetland
Wetland C	38.180983°	-85.882042	PEM1	0.057 acre	Non-JD Wetland
Wetland D	38.18113°	85.882013°	PEM1	0.004 acre	Non-JD Wetland
Wetland E	38.181295°	-85.884482°	PEM1	0.032 acre	Non-JD Wetland
Wetland F	38.180895°	-85.884588°	PEM1	0.111 acre	Non-JD Wetland
Wetland G	38.180643°	-85.884758°	PEM1	0.027 acre	Non-JD Wetland
Wetland N	38.17935°	-85.884356°	PEM1	0.009 acre	Non-JD Wetland

Compensatory Mitigation

Mitigation Statement

MITIGATION STATEMENT
E.ON-US/ LG&E CANE RUN POWER STATION
PROPOSED LANDFILL PROJECT
LOUISVILLE, JEFFERSON COUNTY, KENTUCKY

To mitigate for stream impacts incurred by the planned landfill project, E.ON-US/LG&E proposes payment to the Kentucky Department of Fish and Wildlife Resources In-Lieu Fee (ILF) Program. The ILF for impacted streams was calculated using the U.S. Army Corps of Engineers' Central Kentucky Stream Assessment Protocol at a cost of $120 per debit ($100/debit plus 20% for temporal loss. The total proposed payment into the ILF Program is $304,740. See Table 5 for calculation details. Wetland impact (1.597 acre) will be mitigated by the purchase of mitigation credits at a 1:1 ratio from the PTRL Mitigation Bank in Nelson County, Kentucky.

Table 5. In-Lieu Fee Calculation Table

IN-LIEU FEE CALCULATION TABLES
E.ON-US/LG&E Cane Run Power Station
Proposed Landfill Project
Louisville, Jefferson County, Kentucky

TABLE 5. IN-LIEU FEE TABLE

Before Impact									Impact				After Impact					
Impact ID	JWUS[1] Stream ID	Stream Name	HUC 14 Boundary	Flow Regime or Cowardin Class	Watershed Area (acres)	RBP[2] ID	Initial RBP[2] Score	Initial Quality*	Impact Length (feet)	Average Area of Impact (acres)	Mitigation Ratio Multiplier	Debit (feet or acres)	Predicted RPB score	Predicted Quality	Final Length	Final Ratio	Credits	Balance (feet)
STREAM IMPACT																		
Landfill	E-1a	UT to Mill Creek Cutoff	5140101320050	Ephemeral	4.6	25	62	Poor	846	0.194	0.50	423						-423
Landfill	E-1	UT to Mill Creek Cutoff	5140101320050	Ephemeral	0.2	26	62	Poor	71	0.016	0.50	36						-36
Landfill	E-2	UT to Mill Creek Cutoff	5140101320050	Ephemeral	0.2	11	62	Poor	57	0.013	0.50	29						-29
Landfill	E-3	UT to Mill Creek Cutoff	5140101320050	Ephemeral	0.1	26	62	Poor	96	0.022	0.50	48						-48
Landfill	E-4	UT to Mill Creek Cutoff	5140101320050	Ephemeral	1.9	26	62	Poor	543	0.125	0.50	272						-272
Landfill	E-6	UT to Mill Creek Cutoff	5140101320050	Ephemeral	0.3	3	50	Poor	6	0.001	0.50	3						-3
Landfill	E-7	UT to Mill Creek Cutoff	5140101320050	Ephemeral	0.2	13	50	Poor	87	0.016	0.50	44						-44
Landfill	E-9	UT to Garrison Ditch	5140101320050	Ephemeral	0.9	15	42	Poor	139	0.016	0.50	70						-70
Landfill	I-1	UT to Mill Creek Cutoff	5140101320050	Intermittent	21.9	11	62	Poor	1094	0.101	1.00	1094						-1094
Landfill	I-2	UT to Mill Creek Cutoff	5140101320050	Intermittent	14.3	12	62	Poor	523	0.036	1.00	523						-523
								Ephemeral Impact Total	1845	0.403						Total (+ is credit, - is debit)		-2539.50
								Intermittent Impact Total	1617	0.137						In-Lieu Fee per Foot of Debit	$	120
								Perennial Impact Total	0	0.000								
								STREAM TOTAL	3,462	0.540						STREAM IN-LIEU FEE TOTAL		$304,740

* Stream quality is based upon the Rapid Bioassessment Protocol score. The stream quality classification is based on the scoring ranges for headwater streams in the Bluegrass Region as defined in the Kentucky Division of Water's document, "Methods for Assessing Biological Integrity of Surface Waters in Kentucky".

1 Jurisdictional Waters of the United States

2 Rapid Bioassessment Protocol

Agency Correspondence

Threatened and Endangered Species Correspondence

i. Kentucky State Nature Preserves Commission
ii. U.S. Fish and Wildlife Service
iii. Kentucky Department of Fish and Wildlife Resources

i. Kentucky State Nature Preserves Commission

Donald S. Dott, Jr.
Director

Steven L. Beshear
Governor

Commonwealth of Kentucky
Kentucky State Nature Preserves Commission
801 Schenkel Lane
Frankfort, Kentucky 40601-1403
502-573-2886 Voice
502-573-2355 Fax

October 8, 2008

Michael Frank
GAI Consultants, Inc.
625 Eden Park Drive, Suite 520 Baldwin Building
Cincinnati, OH 45202

Data Request 09-037

Dear Mr. Frank:

This letter is in response to your data request of October 7, 2008 for the E.ON U.S./LG&E Cane Run CCP Storage project. We have reviewed our Natural Heritage Program Database to determine if any of the endangered, threatened, or special concern plants and animals or exemplary natural communities monitored by the Kentucky State Nature Preserves Commission occur near the project area on the Lanesville and Louisville West USGS Quadrangles, as shown on the map provided. Please see the attached reports for more information, which reflect analysis of the project area with three buffers applied:

1-mile for all records – 3 records
5-mile for aquatic records – 17 records
5-mile for federally listed species – 7 records
10-mile for mammals and birds – 18 records

Kirtland's snake (*Clonophis kirtlandii*, KSNPC Threatened, federal species of management concern) formerly inhabited moist, grassy meadows and margins of wetlands in the southern and western portions of Jefferson County. Today the species persists in relict populations in minimally to moderately disturbed areas, mostly along stream drainages, but also in higher spots relatively far from streams. These snakes are regularly encountered in residential areas, mostly in grassy strips in floodplains, vacant lots, and similar sites where they find refuge beneath debris and in crayfish burrows. Disturbance, most notably heavy construction, in these habitats can potentially impact populations of the species.

Plethobasus cyphyus (Sheepnose, federal candidate, KSNPC endangered) may still persist in the Ohio River in the vicinity of this project, even though the vast majority of occurrences for aquatic organisms are from 1966 or earlier. This segment of the river has been severely impacted

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by pollutants from Louisville and upriver. Although river quality is improving many of these organisms apparently have been extirpated from the area.

Orconectes jeffersoni (Louisville crayfish, KSNPC endangered, USFWS Species of Management Concern) is globally ranked as critically imperiled because it is endemic to several drainages in urban areas of Jefferson, Bullitt and Oldham counties, Kentucky. Aquatic species in the area are sensitive to increased turbidity, sediment and other adverse influences on water quality. Our data are not sufficient to guarantee absence of endangered, threatened or sensitive species from the sites of proposed construction disturbance. We recommend that impacted streams be thoroughly surveyed by a qualified biologist prior to any in-stream disturbance.

Falco peregrinus (Peregrine Falcon, KSNPC endangered, federal species of management concern) typically nests on rocky cliffs, bluffs, or dirt banks. Ideal locations include undisturbed areas with a wide view, near water, and close to plentiful prey. Substitute man-made sites include tall buildings, bridges, rock quarries, and raised platforms.

Tyto alba (Barn Owl, KSNPC special concern) can be found in hollow trees, old buildings, barns, silos and other abandoned structures. Before demolition of existing structures, it should be determined that these birds are not present.

I would like to take this opportunity to remind you of the terms of the data request license, which you agreed upon in order to submit your request. The license agreement states "Data and data products received from the Kentucky State Nature Preserves Commission, including any portion thereof, may not be reproduced in any form or by any means without the express written authorization of the Kentucky State Nature Preserves Commission." The exact location of plants, animals, and natural communities, if released by the Kentucky State Nature Preserves Commission, may not be released in any document or correspondence. These products are provided on a temporary basis for the express project (described above) of the requester, and may not be redistributed, resold or copied without the written permission of the Kentucky State Nature Preserves Commission's Data Manager (801 Schenkel Lane, Frankfort, KY, 40601. Phone: (502) 573-2886).

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many

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natural areas in Kentucky have never been thoroughly surveyed, and new plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. We would greatly appreciate receiving any pertinent information obtained as a result of on-site surveys.

If you have any questions or if I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Sara Hines
Data Manager

SLD/SGH

Enclosures: Data Report and Interpretation Key

ii. U.S. Fish and Wildlife Service

United States Department of the Interior

Received
Oct 29, 2008

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
330 West Broadway, Suite 265
Frankfort, Kentucky 40601
(502) 695-0468

October 24, 2008

Mr. Mike Frank
GAI Consultants
625 Eden Park Drive, Suite 250
Cincinnati, OH 45202

Subject: FWS 2009-B-0059 Threatened and endangered species information request for Cane Run Generating Station, Jefferson County, Kentucky

Dear Mr. Frank:

Thank you for the correspondence dated October 7, 2008 regarding the E.ON U.S./Louisville Gas and Electric Company's plan to develop a long-term plan for the storage of coal combustion products produced at the Cane Run Generating Station. According to the provided information, the proposed project will result in the construction of a special waste landfill (or impoundment) at the Cane Run facility.

Fish and Wildlife Service (Service) personnel have reviewed the provided information and offer the following comments. Because there were no habitat descriptions included in the correspondence for the proposed project, the Service cannot make site-specific recommendations. However, the Service has compiled a list of federally listed and federal candidate species that are known to occur or have the potential to occur within the area of concern.

Common Name	Scientific Name	Federal Status
Indiana bat	*Myotis sodalis*	endangered
Gray bat	*Myotis grisescens*	endangered

Several listed mussels species are known or have the potential to occur within the Ohio River in Jefferson County, but as this project does not propose any river impacts, these do not need to be considered. Should the scope of the project change, please contact our office for a revised species list.

Please note that collection records available to the Service may not be all-inclusive. Our database is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitats and does not necessarily provide conclusive evidence that protected species are present

or absent at a specific locality. If additional assistance is needed in determining if the proposed project may impact a federally listed species, we recommend that you contact us for further consultation.

Thank you for the opportunity to comment on this action. If you have any questions regarding the information provided, please contact Jennifer Garland at (502) 695-0468 (ext.115).

Sincerely,

Jennifer Garland

for Virgil Lee Andrews, Jr.
Field Supervisor

iii. Kentucky Department of Fish and Wildlife Resources

KENTUCKY DEPARTMENT OF FISH & WILDLIFE RESOURCES
TOURISM, ARTS, AND HERITAGE CABINET

Steven L. Beshear
Governor

#1 Sportsman's Lane
Frankfort, Kentucky 40601
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Marcheta Sparrow
Secretary

Dr. Jonathan W. Gassett
Commissioner

November 13, 2008

Michael Frank
GAI Consultants, Inc.
625 Eden Park Drive - Suite 520
Cincinnati, OH 45202

RE: Coal Combustion Product Storage Project for the Cane Run Generating Station

Dear Mr. Frank:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) have received your request for the above-referenced information. The Kentucky Fish and Wildlife Information System (KFWIS) indicate that the federally endangered gray bat, *Myotis grisescens* and Indiana bat, *Myotis sodalis* are known to occur within close proximity to the project area. Please be aware that our database system is a dynamic one that only represents our current knowledge of the various species distributions.

- The Indiana bat utilizes a wide array of habitats, including riparian forests, upland forest, and fencerows for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (i.e., dead trees or dead portions of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Removal of suitable Indiana bat roost trees due to construction of the proposed project should be completed between October 15 and March 31 in order to avoid impacting summer roosting Indiana bats.
- To minimize impacts to aquatic resources and bat foraging areas, strict erosion control measures should be developed and implemented prior to construction to minimize siltation into streams located within the project area. Such erosion control measures may include, but are not limited to silt fences, staked straw bales, brush barriers, sediment basins, and diversion ditches. Erosion control measures will need to be installed prior to construction and should be inspected and repaired regularly as needed.

For more information on how to proceed with the federally listed threatened/endangered species please contact the US Fish and Wildlife Service Kentucky Field Office at (502) 695-0468.

It appears that the proposed project has the potential to impact wetland habitats. KDFWR recommends that you look at the appropriate US Department of Interior National Wetland Inventory Map (NWI) and the appropriate county soil surveys to determine where the proposed project may impact wetlands. Additionally, field verification may be needed to determine the extent and quality of wetland habitats within the project area. Any planning should include measures designed to eliminate and/or reduce impacts to wetland habitats. If impacts cannot be avoided, mitigation should be properly designed and proposed to offset the losses. KDFWR will recommend, at a minimum, a 2:1 mitigation ratio for any permanent loss or degradation of wetland habitats.

KDFWR recommends that you contact the appropriate US Army Corps of Engineers office and the Kentucky Division of Water prior to any work within the waterways or wetland habitats of Kentucky. Additionally, KDFWR recommends the following for the portions of the project that impact streams:

- Channel changes located within the project area should incorporate natural stream channel design.
- If culverts are used, the culvert should be designed to allow the passage of aquatic organisms.
- Culverts should be designed so that degradation upstream and downstream of the culvert does not occur.
- Development/excavation during low flow period to minimize disturbances.
- Proper placement of erosion control structures below highly disturbed areas to minimize entry of silt into area streams.
- Replanting of disturbed areas after construction, including stream banks, with native vegetation for soil stabilization and enhancement of fish and wildlife populations. We recommend a 100 foot forested buffer along each stream bank.
- Return all disturbed instream habitat to a stable condition upon completion of construction in the area.
- Preservation of any tree canopy overhanging any streams within the project area.

I hope this information proves helpful to you. If you have any questions or require additional information, please call me at (800) 852-0942 Extension 4472.

Sincerely,

Doug Dawson

Doug Dawson
Wildlife Biologist III

State Historic Preservation Officer Correspondence

A Cultural Resource Survey for a Borrow Area, Settling Ponds, and Flyash Storage Area at the LG&E Cane Run Generating Plant in Jefferson County, Kentucky

Contract Publication Series 08-190

A CULTURAL RESOURCE SURVEY FOR A BORROW AREA, SETTLING PONDS, AND FLYASH STORAGE AREA AT THE LG&E CANE RUN GENERATING PLANT IN JEFFERSON COUNTY, KENTUCKY

by
Russell S. Quick and
Andrew P. Bradbury, RPA

with a contribution by
Jennifer M. Faberson

Prepared for

Stantec

LG&E
an PPL company

Prepared by

cra
cultural resource analysts, inc

Lexington, KY | Florence, WV
North Heights, OH | Evansville, IN | Mt. Vernon, IL
Longmont, CO | Sheboygan, WI

Contract Publication Series 09-160

A CULTURAL RESOURCE SURVEY FOR A BORROW AREA, SETTLING PONDS, AND FLYASH STORAGE AREA AT THE LG&E CANE RUN GENERATING PLANT IN JEFFERSON COUNTY, KENTUCKY

by

Russell S. Quick and Andrew P. Bradbury, RPA

with a contribution by
Jennifer M Faberson

Prepared for

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(502) 232-5000

Prepared by

Cultural Resource Analysts, Inc.
151 Walton Avenue
Lexington, Kentucky 40508
Phone: (859) 252-4737
Fax: (859) 254-3747
E-mail: cmniquette@crai-ky.com
CRA Project No.: K09S018

Charles M. Niquette, RPA
Co-Principal Investigator

Andrew P. Bradbury, RPA
Co-Principal Investigator

September 28, 2009

Lead Agency: United States Army Corps of Engineers (Permit Application Number Pending)
OSA Project Registration Number: FY10_6083

ABSTRACT

On August 10, 11, and 12, 2009, Cultural Resource Analysts, Inc., personnel completed a cultural resource survey of a proposed borrow area, settling ponds, and flyash storage area in Jefferson County, Kentucky. The survey was conducted at the request of Stephen Hall of Stantec Consulting, Inc. The project area consisted of two parcels on either bank of Mill Creek Cutoff: an open field of low grass and weeds in the south and a lightly forested area with moderate undergrowth in the north. The project area was located on the property of the Louisville Gas and Electric Cane Run Generating Plant along the Ohio River approximately 1.3 km (.8 mi) southwest of the community of Riverside Gardens. The entire 55.2-ha (136.4-acre) project area was surveyed.

Prior to the field survey, a records review was conducted at the Office of State Archaeology. The review indicated that no previous archaeological surveys had been conducted and no archaeological sites had been previously recorded within the project area. A review of historic maps showed that three structures were located within, or directly adjacent to, the project area in 1950, but no structures were shown within the project area on later maps.

The field investigation consisted of intensive pedestrian survey supplemented by screened shovel tests, auger testing, and backhoe trenching. All shovel tests indicated extensive disturbance to the soils due to historic and modern land use. Auger and backhoe testing also indicated extensive disturbance to both parcels of the project area.

One archaeological site (15Jf763) was documented during the survey. The site was located at the end of a dead-end road depicted on topographic maps dating between 1912 and 1951. Site 15Jf763 consisted of a moderately low density scatter of artifacts dating to the early to middle twentieth century. All of the artifacts from 15Jf763 were found on the surface. No cultural materials were found in shovel tests, and there was no evidence of intact subsurface remains, intact architectural structures, or archaeological features.

Because of the paucity of materials and the lack of integrity, 15Jf763 is recommended as not eligible for the National Register of Historic Places. No sites listed in, or eligible for, the National Register of Historic Places will be affected by the proposed project, and cultural resource clearance is recommended.

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I. INTRODUCTION

On August 10, 11, and 12, 2009, Cultural Resource Analysts, Inc. (CRA), personnel completed a phase I cultural resource survey of a proposed borrow area, settling ponds, and flyash storage area at the Louisville Gas and Electric (LG&E) Cane Run Generating Station in western Jefferson County, Kentucky. The project area was adjacent to the Ohio River just west of Louisville, Kentucky (Figure 1). The survey was conducted at the request of Stephen Hall of Stantec Constulting, Inc., and the survey area covered approximately 55.2 ha (136.4 acres). Fieldwork for the project was completed by Russell Quick, David Stephenson, Lisa Kelley, and Michael Curren in approximately 104 person hours. Office of State Archaeology (OSA) Geographic Information Systems (GIS) data requested by CRA on July 13, 2009, was returned on July 20, 2009. The results were researched by Heather Barras of CRA at the OSA on July 21, 2009. The OSA project registration number is FY10_6083. The scope of work is included as Appendix A.

Purpose of the Study

The study was conducted to comply with Section 106 of the National Historic Preservation Act. This project requires a Section 404 permit under the Clean Water Act from the United States Army Corps of Engineers (USACE) or is federally funded, and is therefore considered an undertaking subject to Section 106 review.

The purpose of this assessment was to 1) locate, describe, evaluate, and to make appropriate recommendations for the future treatment of any historic or prehistoric archeological properties that may have been threatened by proposed construction activities and 2) to assess the potential for archeological sites requiring preservation in place. For the purposes of this assessment, a site was defined as "any location where human behavior has resulted in the deposition of artifacts, or other evidence of purposive behavior at least 50 years of age" (Sanders 2001:8). Cultural deposits less than 50 years of age were not considered to be sites in accordance with the Secretary of the Interior's "Standards and Guidelines for Archeology and Historic Preservation" (National Park Service 1983).

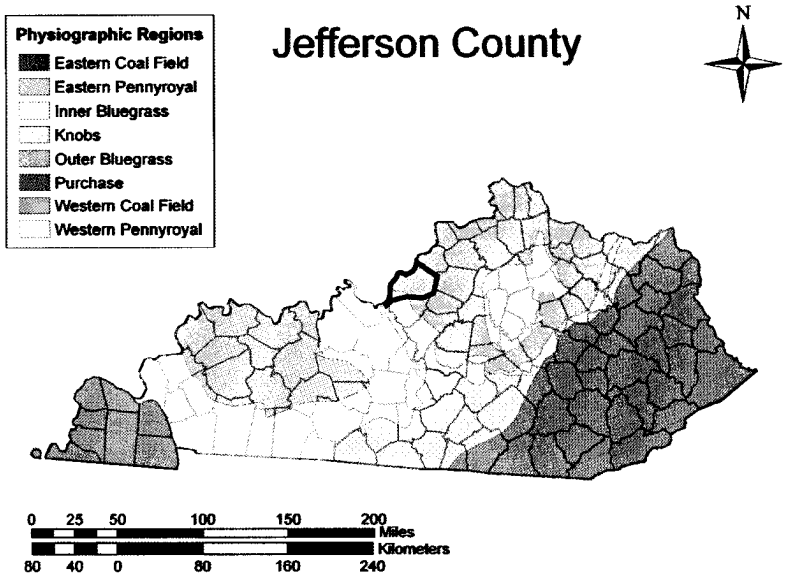

Figure 1. Map of Kentucky showing the location of Jefferson County.

A description of the project area, the field methods used, and the results of this investigation follow. The report is intended to conform to the *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports* (Sanders 2001).

Project Description

The project consists of a proposed 55.2-ha (136.4-acre) borrow area, settling ponds, and flyash storage area. LG&E is proposing to initially borrow clay-bearing soils and sands from two locations in order to cap existing flyash storage mounds. These borrow pits will eventually become storage areas themselves. The project area is located in western Jefferson County approximately 1.3 km (.8 mi) southwest of the community of Riverside Gardens along the Ohio River (Figures 2 and 3). The project area consisted of two parcels on either bank of Mill Creek Cutoff, formerly known as Big Cane Run. The southern parcel consisted of an open field of grass and weeds. The northern parcel consisted of a wooded area with numerous ATV trails and dirt roads.

Summary of Findings

No previously recorded sites were identified within the project area in the OSA file search. One archaeological site (15Jf763) was recorded during the current cultural resource survey. The archaeological site consisted of a moderate scatter of historic household items and structural materials dating to the early to mid-twentieth century. The site was located adjacent to the terminus of a dead-end road depicted on topographic maps dating between 1912 and 1951. Two structures were depicted on a 1950 quadrangle map in close proximity to the historic artifact scatter (United States Geological Survey [USGS] 1950). One of these structures may have been the source of the materials found at Site 15Jf763.

All archaeological remains were found on the surface, and no evidence was found for intact subsurface remains, structures, or archaeological features. Because of the paucity of artifacts and the lack of integrity, Site 15Jf763 is recommended not eligible for the National Register of Historic Places (NRHP). No sites listed in, or eligible for, the NRHP will be affected by the proposed project. Cultural resource clearance is therefore recommended for the project.

II. ENVIRONMENTAL SETTING

Physiography

Jefferson County is almost entirely situated in the Outer Bluegrass physiographic region of Kentucky. The southwest portion of the county is located within the Knobs physiographic region adjacent to Muldraugh Hill. The extreme eastern part of Jefferson County is rolling to hilly, while the central and northern parts are a tableland of low relief (McGrain and Currens 1978:41).

Undulating to rolling ridgetops and short, hilly sideslopes generally characterize the Outer Bluegrass physiographic region. The tableland area occupies the largest part of the county. This area is essentially a gently southwestward sloping surface from a high of 241 m (790 ft) above mean sea level (AMSL) on the east to 152 m (500 ft) AMSL at the foot of the knobs in the southwest part of the county.

The geologic formations specific to the Outer Bluegrass are the limestones, calcareous shales, and siltstones of the Fairview Formation of the Ordovician period. The major hydrologic feature of the county is the Ohio River and its tributaries (Zimmerman 1966).

The area is located within the Ohio River drainage system (Figure 4). Floyds Fork, Harrods Creek, Goose Creek, and numerous small streams drain the county. Garrison Ditch and Mill Creek Cutoff drain the project area.

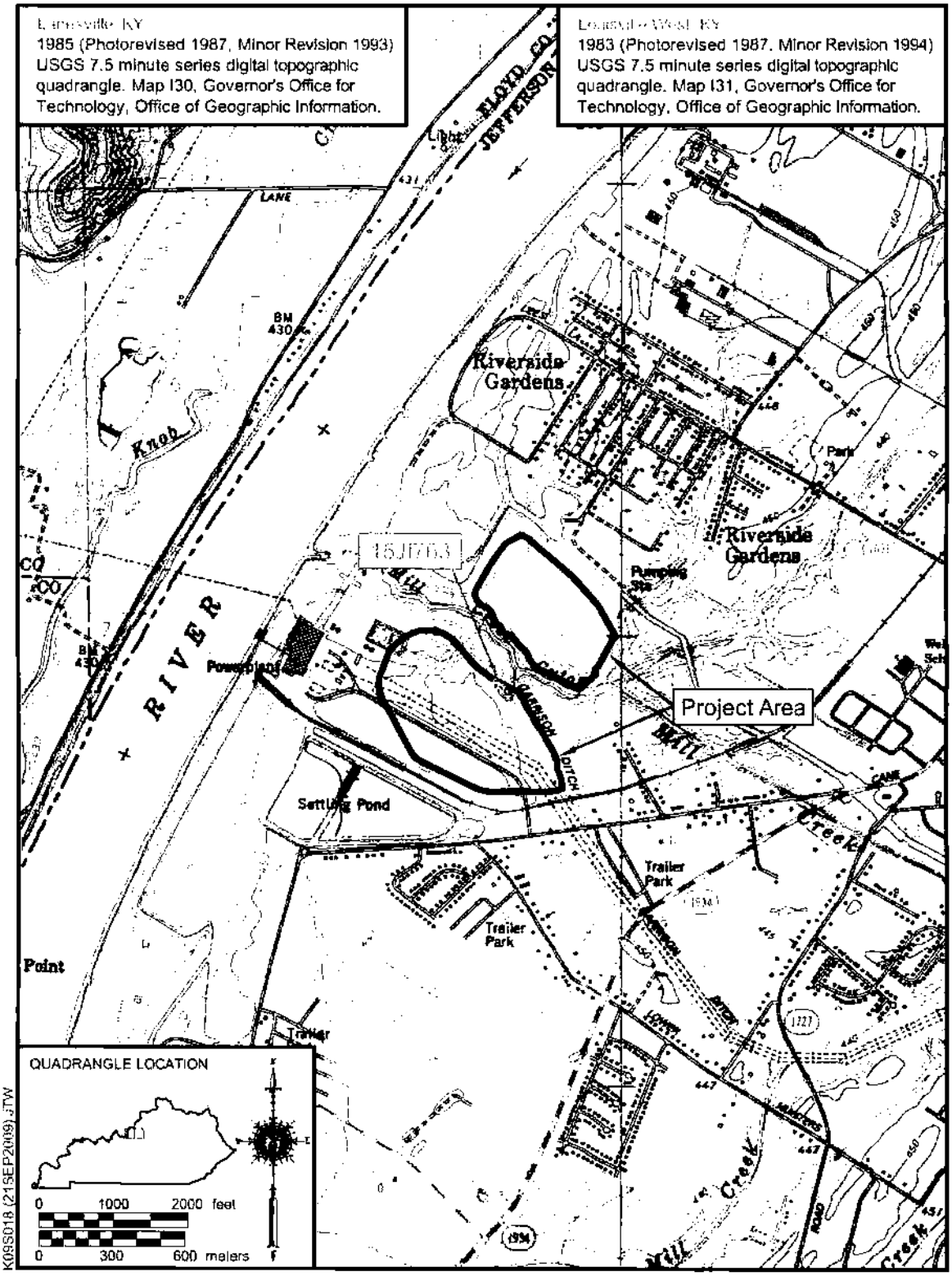

Figure 2. Location of the project area on a topographic map.

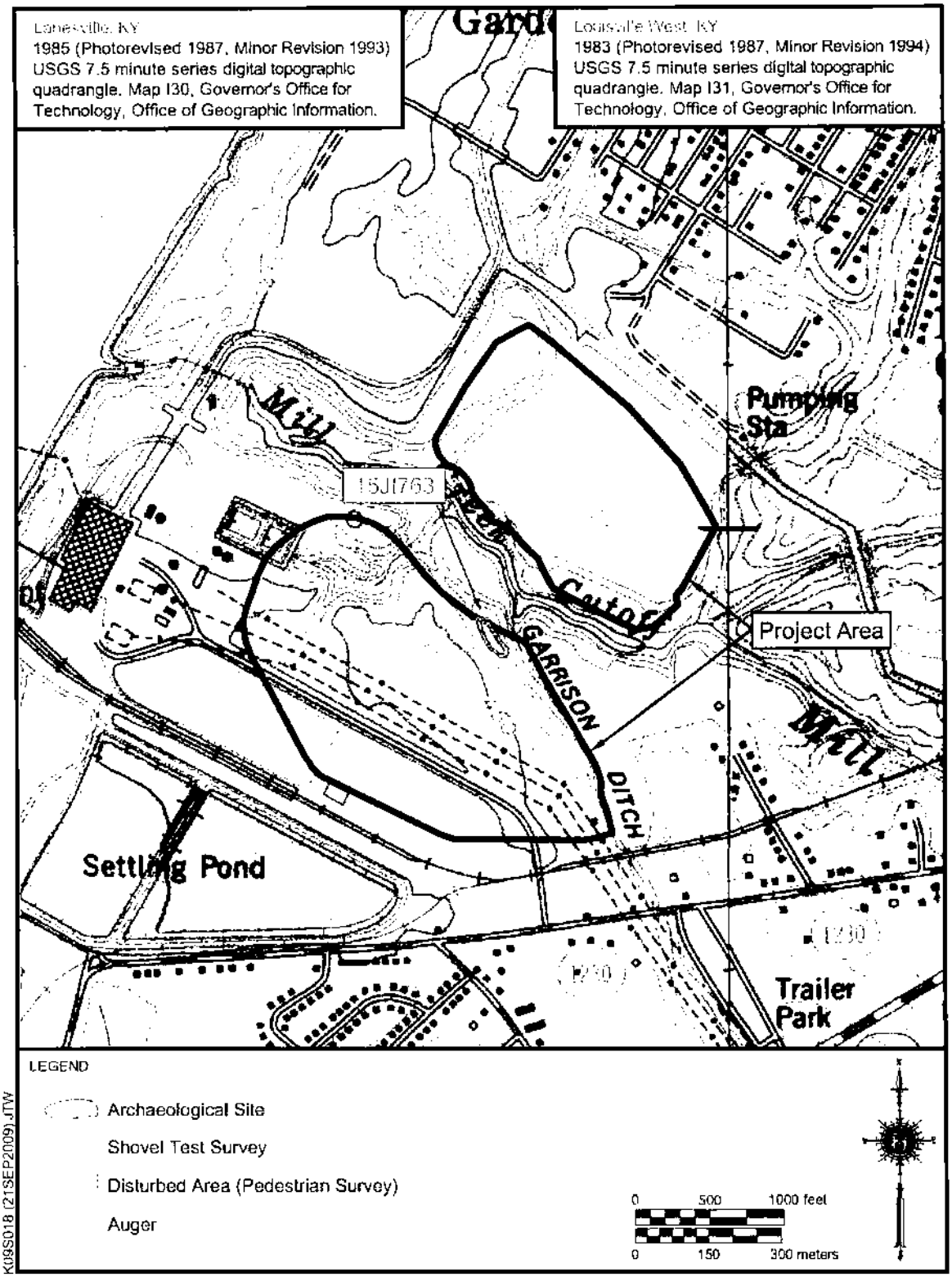

Figure 3. Project area plan map.

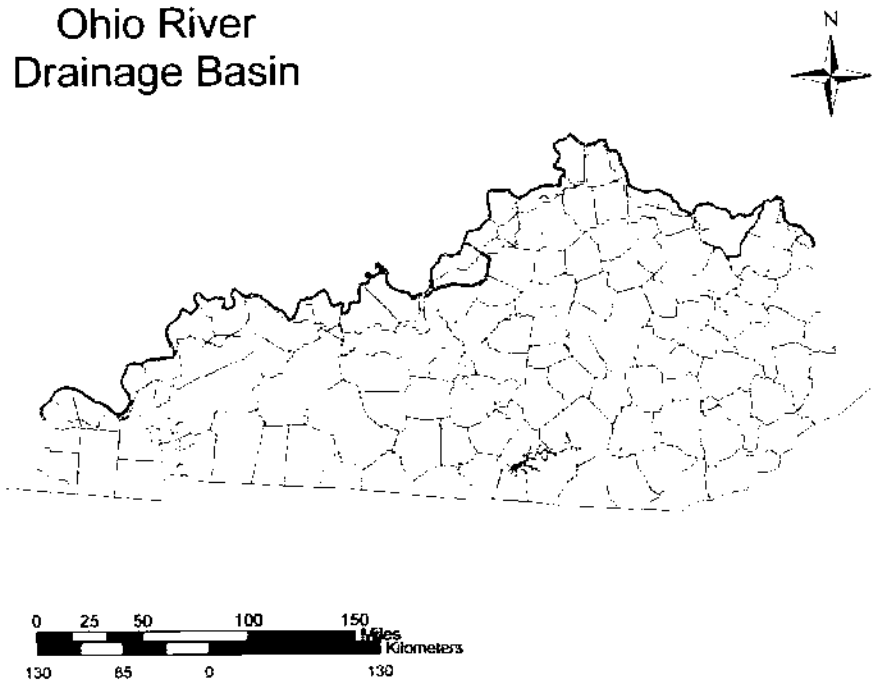

Figure 4. Drainage system of the Ohio River.

Soils

Seven soil associations have been mapped in Jefferson County. A group of geographically related soils that form a fairly definite pattern is called a soil association. Soils found in one association can occur in other soil associations in different patterns. Most of the soils in Jefferson County developed from loess that was deposited on limestone bedrock (Zimmerman 1966:2, 129).

Wheeling-Weinbach-Huntington association soils are level to sloping soils on terraces and bottoms along the Ohio River. Memphis-Loring-Zanesville association soils are sloping to steep soils on loess-capped hills of sandstone and shale. Zipp-Robertsville association soils are poorly drained soils of the slack-water flats. Westmoreland-Litz-Muskingum soils are steep, shallow soils on the Knob Hills and sloping, colluvial soils on footslopes. Russellville-Crider-Dickson association soils are well drained or moderately well drained soils over limestone on uplands. Crider-Corydon association soils are level to sloping on broad ridges and steep, shallow soils over limestone on hillsides. Beasley-Fairmount-Russellville association soils are gently sloping or sloping on narrow ridges and strongly sloping or steep, shallow soils over limestone on hillsides (Zimmerman 1966:2–7).

The Wheeling-Weinbach-Huntington association is dominant in the western portion of Jefferson County and is the only association represented in the current project area (Zimmerman 1966:General Soil Map). Every major soil series within the project area arranged by taxonomic class (subgroup) represented within this association is described in more detail below. The following descriptions were taken from the United States Department of Agriculture-Natural Resources Conservation Service Official Soil Series Descriptions (Soil Survey Staff 2009) unless otherwise noted.

Three quarters of the project area consisted of soils modified by human activity. These include areas of Dump/Ash "soils," Urban Land soils, and Urban Land-Udorthents complex soils. Those areas of the current power plant where coal is stored or where

flyash is processed into environmentally acceptable fill are classified as dump/ash "soils." Urban Land soils have often been disturbed by repeated use and may contain building rubble, scrap metal, and other contaminants. These soils are found within the project area under parking lots and driveways (Soil Survey Staff 2009).

Urban Land-Udorthents complex soils make up the largest percentage of soils in the project area (51 percent). These soils are found on slopes ranging from 0 to 12 percent. The depth to the water table in these soils ranges from 30 to 122 cm (12 to 48 in). The presence of these soils is indicative of extensive human modification of the landscape from, for example, logging, mining, or earth moving. Nearly the entire northern parcel of the project area is mapped as Udorthents soils, probably as a result of the removal of soil for the construction of the levee system along the Ohio River (Soil Survey Staff 2009).

Otwood series soils (Oxyaquic Fragiudalfs) consist of very deep, moderately well drained soils with a fragipan. This series is found on nearly level to moderately steep stream and river terraces. The soil formed in a mixture of loess and silty alluvium and the underlying residuum of shale, siltstone, sandstone, or limestone (Soil Survey Staff 2009).

Robertsville soils (Typic Fragiaqualfs) are typically late Pleistocene in age and are found on stream terraces and concave upland areas that are succeptible to ponding. Slopes range from 0 to 2 percent. These soils developed in old mixed alluvium or colluvium derived from limestone, sandstone, siltstone, shale, or loess. Robertsville soils have an Eg horizon formed by the leaching of silicate clay, iron, and aluminum due to wetness. Robertsville soils are typically found forested or can be used for agriculture if sufficiently drained (Soil Survey Staff 2009).

Sciotoville soils (Aquic Fragiudalfs) are likely late Pleistocene in age and commonly have redoximorphic features within the soil profile and a fragipan below an argillic or cambic horizon (Soil Survey Staff 1999:202). These soils formed on stream terraces from acid silty old alluvium derived from shale, micaceous sandstone, and quartzite. Sciotoville soils are typically used for agriculture (Soil Survey Staff 2009).

The Weinbach series (Aeric Fragiaqualfs) consists of deep, somewhat poorly drained, very slowly permeable soils with fragipans formed in old acid alluvium of stratified silt loam, silty clay loam, and loam with some sand in the underlying materials (Soil Survey Staff 2009). These soils are on terraces and slopes and typically have a dark grayish brown (10YR 4/2) silt loam A-horizon over a brown (10YR 5/3) silt loam E-horizon that has faint light brownish gray (10YR 6/2) mottles. The fragipan (Btx-hrizon) is typically at a depth of 23 inches and is characterized by light brownish gray (10YR 6/2) silty clay loam (10YR 6/2), silty clay loam with many distinct coarse dark brown (10YR 4/3) mottles, and few black (10YR 2/1) accumulations of iron and manganese oxides. Weinbach soils are also likely late Pleistocene aged outwash deposits found on terrace slopes that were previously wooded (Soil Survey Staff 1999:181).

Wheeling series soils (Ultic Hapludalfs) are found on landforms dating to the late Pleistocene (Soil Survey Staff 1999:208). Slopes range from 0 to 55 percent based on landform but are typically from 0 to 8 percent. These soils are very deep and well drained. They formed in the late Pleistocene on river terraces in silty or loamy alluvium. Many areas of Wheeling soil are used for industrial and residential sites along the Ohio River. The final soil in the project area, Urban Land-Alfic Udarents-Wheeling complex, is a combination of Wheeling, Urban Land, and soils that have been modified by mining or earth moving (Soil Survey Staff 2009).

Soil Series Geomorphology, Age, and Archaeological Potential

The soil series are classified by the amount of time it has taken them to form and the landscape position they are found on (Soil

Survey Staff 1999). This information can provide a relative age of the soils and can express the potential for buried archaeological deposits within them (Stafford 2004). The soil order and group classifications for each soil series are used to assist with determining this potential.

Otwood, Robertsville, Sciotoville, Urban Land-Alfic Udarents-Wheeling complex, Weinbach, and Wheeling series soils are classified as Alfisols. This class of soils developed on late-Pleistocene deposits or older surfaces (Soil Survey Staff 1999). Due to their acidity, uncalcified faunal remains are unlikely to be preserved in Alfisols for long periods. However, Alfisols may contain intact archaeological deposits very near or on the ground surface, depending upon the landform on which they formed (e.g., sideslope vs. ridgetop).

The Urban land-Udorthents series soils are classified as Entisols. These are soils that formed very recently in unconsolidated parent material and that do not have diagnostic horizons except an A horizon (Soil Survey Staff 1999). Because of their recent age, Entisols rarely have buried and intact archaeological deposits.

As noted, the majority of the project area had been previously disturbed by human activities, including earth removal, logging, and the creation of a flood wall, large drainage basins, and ditches for water control. Even those areas that were mapped as potentially having archaeological resources were heavily disturbed. In most cases, the topsoil had been destroyed all the way to the subsoil (C horizon), which was exposed at the surface.

Climate

The climate in this area of Kentucky is continental in character, and temperature and precipitation levels fluctuate widely. The prevailing winds are westerly; therefore, most of the storms cross the state in a west to east pattern. Low-pressure storms that originate in the Gulf of Mexico and move in a northeasterly direction across Kentucky contribute the greater proportion of precipitation received by the state. Warm, moist, tropical air masses from the Gulf predominate during the summer months when humidity levels also remain quite high. As storms move through the state, occasional hot and cold periods of short duration may be experienced. During the spring and fall, storm systems tend to be less severe and have a smaller frequency, resulting in less radical extremes in temperature and rainfall (Anderson 1975).

Based on records kept in Louisville, the average daily maximum temperature in January is 43.5 degrees Fahrenheit, whereas the average daily minimum temperature is 25.5 degrees Fahrenheit. The average temperature range for July is a maximum of 88.5 degrees Fahrenheit and a minimum of 65.5 degrees Fahrenheit. Precipitation levels indicate an average range of approximately 5.71 cm (2.25 in) for October to 11.66 cm (4.59 in) for March (Zimmerman 1966:132).

Prehistoric Climate

Climatic conditions during the terminal Pleistocene and Holocene ages represent a series of transitions in temperature, rainfall, and seasonal patterns (Anderson 2001; Niquette and Donham 1985:6–8; Shane et al. 2001). These transitions created a wide range of ecological variation, which altered survival strategies of human populations. One can posit a link between certain climatic events and the development of prehistoric cultures in the eastern woodlands of North America (Anderson 2001). Human responses to environmental factors are varied though, and not all cultural change was "determined" by climatic events.

The Wisconsin glacial maximum occurred approximately 21,400 years B.P., or 18,000 radiocarbon years before present (rcbp) (Anderson 2001; Delcourt and Delcourt 1987). The landscape at that time was quite different from that of today. Much of the mid-continent consisted of periglacial tundra dominated by boreal conifer and jack-pine forests. Sea levels were approximately 100 m (328 ft) below present levels, and because so much water was contained by the glaciers, the coastal plains

were approximately twice the size they are today (Anderson 2001:152). During the Wisconsin glacial epoch, eastern North America was populated by a variety of faunal species, including megafaunal taxa such as mastodon, mammoth, saber-toothed tiger, and Pleistocene horse, as well as by modern taxa such as white-tailed deer, raccoon, and rabbit.

A general warming trend and concomitant glacial retreat was under way by circa 15,000 B.P. (Anderson 2001; Shane 1994). After 14,000 B.P., the boreal forest gave way to a mixed conifer/northern hardwoods forest complex. By 10,000 B.P., southern Indiana was probably on the northern fringes of expanding deciduous forests (Delcourt and Delcourt 1987:92–98). Pollen records from the Gallipolis Lock and Dam on the Ohio River near Putnam County, West Virginia, reveal that all the important arboreal taxa of mixed mesophytic forest had arrived in the region by 9000–8500 B.P. (Fredlund 1989:23). Reidhead (1984:421) indicates that the generalized hardwood forests were well established in southeastern Indiana and southwest Ohio by about 8200 B.P.

Prior to approximately 13,450 B.P., conditions were harsh but capable of supporting human populations. It now appears that some people inhabited North America at this time (Adovasio et al. 1998; Dillehay 1997; McAvoy and McAvoy 1997). Populations were probably small, scattered, and not reproductively viable (Anderson 2001). The Inter-Allerod Cold Period, circa 13,450–12,900 B.P, witnessed the spread of Clovis populations across the continent (Anderson 2001). This period was followed by the rapid onset of a cooling event known as the Younger Dryas, during which megafauna species became extinct, vegetation changed dramatically, and temperature fluctuated dramatically. The Younger Dryas corresponded with the end of the Clovis culture, which gave way to a variety of subregional cultures across eastern North America. The rapid climate change, perhaps as short as 10–40 years, may have been a factor in this settlement shift.

The beginning of the Holocene age (circa 11,300–12,700 B.P.) is associated with rapidly warming temperatures, decreases in cloud cover, and generalized landscape instability (Delcourt 1979:270; Webb and Bryson 1972:107). Temperature increases during this period are estimated to have been three times greater than later Holocene fluctuations (Webb and Bryson 1972:107). During the early Holocene, rapid increases in boreal plant species occurred on the Allegheny Plateau in response to the retreat of the Laurentide ice sheet from the continental United States (Maxwell and Davis 1972:517–519; Whitehead 1973:624). At lower elevations, deciduous species were returning after having migrated to southern Mississippi Valley refugia during the Wisconsin advances (Delcourt and Delcourt 1981:147). The climate during the early Holocene was considerably cooler than the modern climate, and extant species in upper altitude zones of the Allegheny Plateau reflect conditions similar to the Canadian boreal forest region (Klippel and Parmalee 1982; Maxwell and Davis 1972:515–516). Conditions at lower elevations were less severe and favored the transition from boreal to mixed mesophytic species. At Cheek Bend Cave in the Nashville Basin, an assemblage of small animals from the Late Pleistocene confirms the environmental changes that took place during the Pleistocene to Holocene transition, and the resulting extinction of Pleistocene megafauna and establishment of modern fauna in this area (Klippel and Parmalee 1982).

Traditionally, Middle Holocene (circa 8900–5700 B.P./8000–5000 rcbp) climate conditions were thought to be consistently dryer and warmer than the present (Delcourt 1979:271; Klippel and Parmalee 1982; Wright 1968). In this model, the influx of westerly winds during the Hypsithermal climatic episode contributed to periods of severe moisture stress in the Prairie Peninsula and to an eastward advance of prairie vegetation (Wright 1968). Prairies expanded in central Indiana between 8000 and 7000 B.P. (Webb et al. 1983). Pollen data from Hamilton and Marion counties in central Indiana indicate an

oak/hickory dominance of the forest complex and warm, dry conditions sometime after about 8000 B.P. (Engelhardt 1960, 1965).

More recent research (Anderson 2001; Shane et al. 2001:32–33) suggests that the Middle Holocene was marked by considerable local climatic variability. Paleoclimatic data indicate a period of more pronounced seasonality characterized by warmer summers and cooler winters. This evidence is supported by ice core data that show no appreciable decrease in continental ice volume, which would be expected with an increase in global temperature (Hu et al. 1999). However, Webb et al.'s (1983) hypothesis of increased aridity during this period is still valid for much of the region. Delcourt (1979:274) identified Middle Holocene moisture stress along the Cumberland Plateau in Tennessee. Paleoecological data indicate that xeric conditions were not as extreme in this area as in the Midwest, where a considerable advance of prairie vegetation occurred. In fact, because of shifting tropical air masses, the southern and central Appalachians may have experienced increased precipitation at this time (Delcourt and Delcourt 1997).

The Hypsithermal episode probably influenced adaptive strategies at this time. Stafford (1994) suggests that changing vegetation resulted in heterogeneous upland resource availability in southern Indiana. In this model, the patchy resource base was exploited through a logistical collector strategy, a change from the generalized foraging of the preceding period. In the southeast, the increased seasonal extremes, expansion of pine forests at the expense of oaks, and increasingly xeric conditions probably caused significant social stress to Middle Archaic populations. This stress may have been ameliorated by the consolidation of peoples into riparian settings where hardwood forests persisted (Anderson 2001).

The earliest distinguishable Late Holocene climatic episode began circa 5000 B.P. and ended around 3000 B.P. This episode is associated with the establishment of essentially modern deciduous forest communities in the southern highlands and increased precipitation across most of the mid-continental United States (Delcourt 1979:270; Maxwell and Davis 1972:517–519; Shane et al. 2001; Warren and O'Brien 1982:73). Changes in local and extra-local forests after about 4800 B.P. may also have been the result of anthropogenic influences. Fredlund (1989:23) reports that the Gallipolis pollen record showed increasing local disturbance of the vegetation from circa 4800 B.P. to the present, a disturbance that may have been associated with the development and expansion of horticulture activity. Based on a study of pollen and wood charcoal from the Cliff Palace Pond in Jackson County, Kentucky, Delcourt and Delcourt (1997:35–36) recorded the replacement of a red cedar–dominated forest with a forest dominated by fire-tolerant taxa (oaks and chestnuts) around 3000 B.P. The change is associated with increased local wildfires (both natural and culturally augmented) and coincided with increases in cultural utilization of upland (mountain) forests.

Beginning around 2800 B.P., generally warm conditions, probably similar to those of the twentieth century, prevailed until the onset of the Neo-Boreal episode, or Little Ice Age, around 700 B.P. Despite this trend, brief climatic fluctuations occurred during this period. Some of these fluctuations have been associated with adaptive shifts in midwestern prehistoric subsistence and settlement systems. For example, the Middle Woodland Hopewellian florescence is temporally correlated with the relatively mild sub-Atlantic climatic episode (Griffin 1961). Likewise, the culture's decline corresponds roughly to the Vandal Minimum (circa A.D. 400–800), a period of global temperature decline. Struever and Vickery (1973) suggest a possible correlation between the onset of a cooler, moister period (circa 1600 B.P.) and increased use of Polygonum by Late Woodland groups in the Midwest (Struever and Vickery 1973:1215–1216). During this same period (1600–1300 B.P.), warmer temperatures have been inferred for the Great Plains and dryer conditions for the Upper Great Lakes

(Baerreis et al. 1976; Warren and O'Brien 1982). Other fluctuations during the Late Holocene are similarly non-uniform across the mid-continental United States; however, the interfaces of all fluctuations are generally consistent. Local paleoecological evidence is required to determine the kinds of climatic fluctuations Woodland populations experienced during the Pacific episode. Given evidence of fluctuations elsewhere, changes most likely occurred circa 1700 B.P., 1300 B.P., and 900 B.P., with a possible earlier change around 2300 B.P.

Studies of historic weather patterns and tree-ring data by Fritts et al. (1979) have indicated that climatological averages are "unusually mild" when compared to seventeenth- to nineteenth-century trends (Fritts et al. 1979:18). The study suggests that winters were generally colder, weather anomalies were more common, and unusually severe winters were more frequent between A.D. 1602 and A.D. 1899 than after A.D. 1900. Cooler, moister conditions are associated with the Neo-Boreal episode, which began around 700 B.P. and coincided with minor glacial advances in the northwest and Europe (Denton and Karlen 1973; Warren and O'Brien 1982:73). This episode is viewed by Warren and O'Brien as a causal factor in vegetation pattern shifts in northeast Missouri (Warren and O'Brien 1982:74–76). Fluctuations in the Neo-Boreal episode appear to have varied locally (Baerreis et al. 1976:50–52; Warren and O'Brien 1982:73).

The effects of the Neo-Boreal episode, which ended during the mid- to late-nineteenth century, have not been studied in detail for this region. It appears that the area experienced less radical temperature decreases during the Late Neo-Boreal than did the upper Midwest and northern Plains (Fritts et al. 1979), so it follows that related changes in extant vegetation would be more difficult to detect. It is probably safe to assume that average temperatures were at least a few degrees cooler during the late Prehistoric and early Historic periods. The frequency of severe winters and average winter precipitation were probably greater as well. Several scholars (e.g., Anderson 2001; Griffin 1961; Grove 1988) have observed that the beginning of the Little Ice Age disrupted prehistoric cultures in the Eastern Woodlands. Anderson (2001:166) relates the agricultural difficulties brought on by the climatic downturn to "increased warfare and settlement nucleation, and decreased long distance exchange and monumental construction."

Vegetation

The Outer Bluegrass physiographic province is located within the Western Mesophytic Forest (Braun 1950:146). The major vegetation types in this region form a complex mosaic strongly influenced by underlying geologic strata. This is in strong contrast to the situation in the Mixed Mesophytic Forest to the east. Forests in the Bluegrass are generally less luxuriant than those in the Appalachian Plateau and have a greater tendency towards dominance of a few species (Braun 1950:122–123).

The transition from extensive, mixed mesophytic communities in the far eastern part of the state to extensive oak and oak-hickory communities in central and western Kentucky is well marked, despite the more generalized mosaic pattern and the presence of large prairie areas (Braun 1950:123). While old forest trees remain on large estates, there are no extensive areas of original vegetation outside of the river gorges in the Bluegrass, and it is impossible to reconstruct a picture of the original forest conditions (Braun 1950:125). Beech trees are not represented naturally in the Inner Bluegrass forest; however, beech trees are part of the forested areas in the Outer Bluegrass. The Western Mesophytic Forest is dominated by oak and hickory, but a wide variety of other species are represented.

Description of the Project Area

The center of the project area was located approximately 729 m (2,392 ft) north-northeast of the intersection of KY 1934 (Cane Run Road) and Lower Hunters Trace near the

community of Riverside Gardens 1,319 m (4,327 ft) southwest of the intersection of Camp Ground Road and Lees Lane and 600 m (1,969 ft) due east from the guard house at the LG&E Cane Run Generating Plant. Elevations in the project area ranged from 121 m (397 ft) to 140 m (459 ft). The topography was generally flat, but it sloped steeply near drainages. The project area was split into two parcels by Mill Creek Cutoff. The northern parcel was bounded on the northwest by a dike and on the southeastern edge by a tributary of Mill Creek. The southern parcel was bounded on the southeastern edge by Garrison Ditch, a man-made water control feature, and on the northwest by the power plant itself.

Soils within the project area were highly disturbed, primarily due to the construction of flood control features and industrial activities. A typical soil profile consisted of a shallow Ap horizon of dark brown (10YR 3/3) clay loam to a depth of 2–10 cm bgs followed by a subsoil of yellowish brown (10YR 5/4) silty clay loam.

Vegetation within the proposed project area consisted of forest in the northern parcel and fields of knee-high grasses and weeds in the southern parcel (Figures 5 and 6). Exposed areas of surface visibility existed primarily on the terraces in forested areas, in areas disturbed by earth moving, and along the numerous ATV trails.

III. PREVIOUS RESEARCH AND CULTURAL OVERVIEW

Prior to initiating fieldwork, a search of records maintained by the NRHP (available online at: http://www.nr.nps.gov/nrloc1.htm) and the OSA (FY10_6083) was conducted to: 1) determine if the project area had been previously surveyed for archaeological resources; 2) identify any previously recorded archaeological sites that were situated within the project area; 3) provide information concerning what archaeological resources could be expected within the project area; and 4) provide a context for any archaeological resources recovered within the project area. The OSA file search was conducted between July 13 and 21, 2009. The work at OSA consisted of a review of professional survey reports and records of archaeological sites for an area encompassing a 2-km radius of the project footprint. To further characterize the archaeological resources in the general area, the OSA archaeological site database for the county was reviewed and synthesized. The review of professional survey reports and archaeological site data in the county provided basic information on the types of archaeological resources that were likely to occur within the project area and the landforms that were most likely to contain these resources. The results are discussed below.

OSA records revealed that 11 previous professional phase I archaeological surveys, 1 phase II archaeological testing project, and 1 small-scale excavation project have been conducted within a 2-km radius of the project area. Six previously recorded sites have been located in this area also. None of these sites, however, will be affected by the proposed flyash storage facilities.

The records search revealed that six prehistoric (15Jf21, 15Jf237, 15Jf305, 15Jf306, 15Jf341, and 15Jf409) archaeological sites were situated within a 2-km radius of the project area. The 2-km radius included areas within the Louisville West, Kentucky/Indiana, and Lanesville, Indiana/Kentucky, 7.5-minute series quadrangles (USGS 1951a and 1951b).

Previous Archaeological Surveys

Between August 9 and 27, 1971, the University of Louisville Archaeological Survey conducted phase I investigations for a proposed floodwall, alternate routes, borrow areas, ponding areas, and a recreation area (Chapman 1971). The survey was conducted at the request of the USACE. An unknown amount of acreage was investigated by pedestrian survey and shovel testing.

Figure 5. Overview of the northern parcel of the project area, facing southwest.

Figure 6. Overview of the southern parcel of the project area, facing northwest.

Twenty-eight sites were documented during the survey. Site 15Jf237, a large open habitation site, was located on the second terrace of the Ohio River within 2 km of the current project area. The Arrowhead Farm site, as it was called, had reportedly been heavily surface collected in the past, but test pits revealed at least two occupation zones separated by sterile strata. The site was recommended for intensive investigations.

Excavations were carried out at the Arrowhead Farm site (15Jf237) by the University of Louisville Archaeological Survey in August 1973 (Mocas 1976). The excavations were carried out at the request of the Jefferson County Department of Public Works. Methods included the excavation of 1.5-x-3.0-m (5.0-x-10.0-ft) test units, the removal of the plowzone by backhoe, and posthole testing. Flotation samples were also taken.

The excavations at Arrowhead Farm revealed that it was transitional between the Archaic and Woodland periods. Radiocarbon dates ranged between 665 and 1030 A.D. An Early Woodland bundle burial was found associated with refuse pits, pottery sherds, and a burned area interpreted as a funeral fire. The site also had a Middle Woodland shell midden near its center that contained pottery related to Crab Orchard types. The Late Woodland component consisted of a number of hearths and storage pits. The artifacts from this period included triangular bifaces and pottery. The Arrowhead Farm site was eventually destroyed by the construction of the Louisville flood wall.

From December 1974 through June 30, 1975, the University of Louisville Archaeological Survey conducted an archaeological reconnaissance of 654 ha (1,616 acres) for a proposed river-oriented industrial and port facility. The survey was conducted at the request of the Louisville and Jefferson County Riverport Authority. Methods included pedestrian survey, shovel testing, and test unit excavation.

The survey documented 29 prehistoric archaeological sites. Two of these, Sites 15Jf305 and 15Jf306, are located within 2 km of the current project area. Both of these sites were recommended for monitoring in the event of future land alteration; however, neither of these sites is located within the current project area, and neither will be impacted by the proposed flyash storage facilities (Granger and DiBlasi 1975).

In April, October, and November 1975, the University of Louisville Archaeological Survey conducted an archaeological reconnaissance prior to the construction of a connector/extension along the Jefferson Freeway. The survey was conducted at the request of the Kentucky Transportation Cabinet. An unknown quantity of acreage was investigated by pedestrian survey supplemented by shovel testing.

Five prehistoric archaeological sites were documented during the project. One of these, the Spadie site (15Jf15), was a large, well known Late Archaic/Early Woodland site that was recommended as eligible for the NRHP and was excavated prior to the construction of the Louisville floodwall. No further work was recommended for the others unless changes to the project impacted them. None of these sites are located within 2 km of the current project area, and none will be impacted by the proposed flyash storage facilities (Granger and DiBlasi 1976).

In 1975, Ohio Valley Archaeological Research Associates conducted a phase I archaeological survey for proposed sewer alignments (Chapman 1975). The survey was requested by Vollmer-Presnell-Pavlo – A Joint Venture. Proposed sewer alignments totaling 37 ha (92 acres) were investigated by pedestrian survey. Thirty-seven sites were documented during the project. One of these sites, 15Jf341, a very light surface scatter of lithics, was located within 2 km of the current project area. Site 15Jf341 was severely eroded, and no further work was recommended. The site is not located within the current project area and will not be impacted by the proposed flyash storage facilities.

On January 1, 1976, the University of Louisville Archaeological Survey conducted an archaeological reconnaissance prior to a proposed road widening project along Cane Run Road. The survey was carried out at the request of the Kentucky Transportation Cabinet. Fifteen meters (50 ft) on either side of the existing Cane Run Road were investigated by pedestrian survey and shovel testing, but no archaeological sites were documented. Light monitoring of the area during construction was recommended (Granger et al 1976).

In May 1977, Archaeological Services, Inc., conducted an archaeological survey for a proposed interceptor sewer line (Glover et al 1977). The survey was requested by Vollmer-Presnell-Pavlo and the Louisville and Jefferson County Metropolitan Sewer District. A corridor approximately 13 km (8 mi) long was investigated by pedestrian survey and shovel testing.

Eleven prehistoric sites were documented during the survey. One of these sites, 15Jf21, a small prehistoric open area habitation without mounds, was located within 2 km of the current project area. Site 15Jf21 was recommended for further archaeological work; however, this site is not located within the current project area and will not be impacted by the proposed flyash storage facilities.

In August 1977, Archaeological Services, Inc., of Kentucky, conducted a phase II archaeological assessment for new proposed sewer pipeline alignments (Turnbow and Allen 1977). The survey was conducted at the request of Vollmer-Presnell-Pavlo and the Louisville and Jefferson County Metropolitan Sewer District. The survey documented eight sites, one of which, 15Jf409, was located within 2 km of the current project area. Site 15Jf409 was a prehistoric site of unknown temporal affiliation and was not recommended for further work. The site is not located within the current project area and will not be impacted by the proposed flyash storage facilities.

In November 1994, CRA conducted a phase I archaeological survey for a proposed location for a Shively post office branch (Kerr 1994a). Approximately 2 ha (5 acres) were investigated by pedestrian survey and shovel testing. No archaeological sites were documented during the survey, and no further work was recommended.

In November 1994, CRA conducted a phase I archaeological survey for another proposed location for a post office in Shively (Kerr 1994b). Approximately 1.6 ha (4.0 acres) were investigated by pedestrian survey and shovel testing. No archaeological sites were documented during the survey, and no further work was recommended.

In December 1996, Pamela A. Schenian and Stephen T. Mocas conducted a phase I archaeological survey of a location for a proposed middle school (Schenian and Mocas 1997). The survey was requested by the Jefferson County Public Schools because a historic cemetery was reported to exist near the proposed building site. Approximately .14 ha (.35 acres) were investigated by pedestrian survey and shovel testing. No archaeological sites or graves were documented by the survey, but monitoring of the building site during construction was recommended because of the potential for unmarked graves.

In January and Feburary 2005, ARCS Ventures, Inc., conducted a phase I archaeological survey of a proposed real estate development (Granger and Smith 2006). The survey was conducted at the request of Redwing Ecological Services, Inc. Approximately 17 ha (43 acres) were investigated by pedestrian survey, shovel testing, and backhoe trenching. No archaeological sites were documented during the survey, and no further work was recommended.

In February 2006, CRA conducted a phase I cultural resource survey of a proposed housing development (Davies 2006). Approximately 3.8 ha (9.5 acres) were investigated by pedestrian survey supplemented by shovel testing. No archaeological sites were documented during the survey, and no further work was recommended.

Archaeological Site Data

According to available data, 657 archaeological sites have been recorded in Jefferson County (Table 1). The site data indicate that the majority of archaeological sites recorded in Jefferson County consist of open habitations without mounds (78 percent). Other site types in the county include open habitation sites with mounds, historic farm/residence, cemeteries, caves, earth mounds, industrial, quarries, workshops, rockshelters, and other undetermined site types. Open habitations without mounds and historic farm/residences are the only site types that occur in numbers equaling more than 3 percent of the total number for Jefferson County.

Of the time periods represented, historic farm residences comprised 16 percent of the total recorded. For prehistoric sites, the indeterminate or unspecified time periods represent the highest number (n = 318, 41 percent). Of the sites with prehistoric temporal assignations, the Archaic time period represents the highest number recorded (n = 169, 14 percent), with Woodland having 106 sites representing 14 percent of the total, the Late Prehistoric with 57 sites representing 7 percent, and Paleoindian with the smallest number of representative time periods (n = 5, less than 1 percent).

The landform locations of sites in Jefferson County were examined to determine the likelihood of encountering sites on similar landforms within the project area. The majority of sites in Jefferson County are located on floodplains (53 percent), and the large majority of site types found on floodplains are open habitations without mounds (90 percent). Dissected uplands (n = 85, 13 percent) and terraces (n = 86, 13 percent) have similar numbers of sites; hillsides (n = 40, 6 percent) and undissected uplands (n = 42, 6 percent) also contain similar ratios of site localities. Open habitation without mounds has the highest number of site types recorded in Jefferson County and has a congruent number of sites represented on all landforms. Though open habitation sites are the most frequent site type recorded on all landforms, they are most likely to be found on floodplains.

Table 1. Summary of Selected Information for Previously Recorded Archaeological Sites in Jefferson County, Kentucky.

Site Type:	N	%
Cave	2	0.3
Cemetery	10	1.52
Earth Mound	2	0.3
Historic Farm/Residence	79	12.02
Industrial	8	1.22
Isolated Find	1	0.15
Mound Complex	1	0.15
Open Habitation With Mounds	2	0.3
Open Habitation Without Mounds	509	77.47
Other	5	0.76
Other Special Activity Area	2	0.3
Quarry	1	0.15
Rockshelter	4	0.61
Undetermined	17	2.59
Workshop	9	1.37
Unspecified	5	0.76
Total	657	100
Time Periods Represented:	**N**	**%**
Paleoindian	5	0.64
Archaic	169	21.56
Woodland	106	13.52
Late Prehistoric	57	7.27
Indeterminate Prehistoric	308	39.29
Historic	129	16.45
Unspecified	10	1.28
Total	784*	100
Landform:	**N**	**%**
Dissected Uplands	85	12.94
Floodplain	349	53.12
Hillside	40	6.09
Terrace	86	13.09
Undissected Uplands	42	6.39
Unspecified	55	8.37
Total	657	100

** One site may represent more than one time period.*

Map Data

In addition to the file search, a review of available maps was initiated to help identify potential historic properties (structures) or historic archaeological site locations within the proposed project area. The following maps were reviewed:

1858 Map of Jefferson County, Kentucky. Jefferson County Office of Historic Preservation (Bergman);

1912a Kosmosdale, Kentucky, 15-minute series topographic quadrangle (USGS);

1912b Topography of Jefferson County, Kentucky (USGS);

1937 Highway and Transportation Map of Jefferson County, Kentucky (Kentucky Department of Highways [KDOH]);

1950 Kosmosdale, Kentucky, 15-minute series topographic quadrangle (USGS);

1953 General Highway Map of Jefferson County, Kentucky (Kentucky State Highway Department [KSHD]);

1951a Lanesville, Indiana/Kentucky, 7.5-minute series topographic quadrangle (USGS);

1951b Louisville West, Kentucky/Indiana, 7.5-minute series topographic quadrangle (USGS).

The historic maps indicated that as many as seven structures were located within, or directly adjacent to, the study area. Historic Map Structures (MSs) 1 and 2 were first depicted on the 1858 Map of Jefferson County, Kentucky (Figure 7). MSs 3 and 4 were first depicted on the 1912 map of the Topography of Jefferson County. MS 1 and 2 are also depicted on this map. MSs 1–3 are depicted on the 1912 Kosmosdale, Kentucky/Indiana, 15-minute series quadrangle, but MS 4 is either missing or obscured by other features on this map. The same is true on the 1942 reprint of this map; however, MS 4 reappears on the 1950 Kosmosdale, Kentucky/Indiana, 15-minute series quadrangle, so it is probable that it was simply obscured on the earlier versions of this quadrangle.

MSs 1–4 are not depicted on the 1937 Highway and Transportation map of Jefferson County; however, two new structures, MSs 5 and 6, are shown in the southern part of the project area. As mentioned, the 1950 Kosmosdale 15-minute series quadrangle depicts MS 4. It also depicts MSs 1–3 and MS 6 but omits MS 5. In addition, three new structures, MSs 7–9, were depicted on this map. Another change is that MS 1 and MS 3 were shown with two outbuildings each (Figure 8).

All of these structures, with the exception of MS 5 and possibly MS 4, appear to be depicted on the 1951 Lanesville, Indiana/Kentucky, 7.5-minute series quadrangle. MSs 1 and 3 are again depicted with their outbuildings. MS 4 is either missing or obscured on this map. The 1953 General Highway Map of Jefferson County depicts only five structures, MSs 1, 3, 7, 8, and 9.

The locations of all of the historic map structures that were determined to be within the proposed area of disturbance (MSs 4–8) were investigated for archaeological deposits according to accepted methods. MSs 1–3 and 9 were determined to be outside of the current project area. The field survey documented one site, 15Jf763, which may be the remains of one of the historic map structures (either MS 4 or 7). Site 15Jf763 was documented close to where these structures were depicted on the historic maps. No buildings or building remains were observed in the locations of the other historic map structures, probably due to their removal during the construction of the power plant and floodwall system.

Survey Predictions

Considering the known distribution of sites in the county, the available information on site types recorded, and the nature of the present project area, certain predictions were possible regarding the kinds of sites that might be encountered within the project area. Prehistoric open habitation sites were the primary site types expected, but historic residences and cemeteries were also considered a possibility.

Cultural Overview

Paleoindian Period (before 8000 B.C.)

It has been recognized that the Paleoindian cultural tradition in the northeastern United States originated with the Clovis culture, a widespread, homogeneous New World culture typified by a distinctive lithic assemblage. The most distinctive members of this assemblage are lanceolate shaped, often fluted, hafted bifaces (Maggard and Stackelbeck 2008). The presence of other artifact types in these Paleoindian assemblages, such as chert knives, scrapers, unifacial tools, and blades, is consistent across the eastern United States.

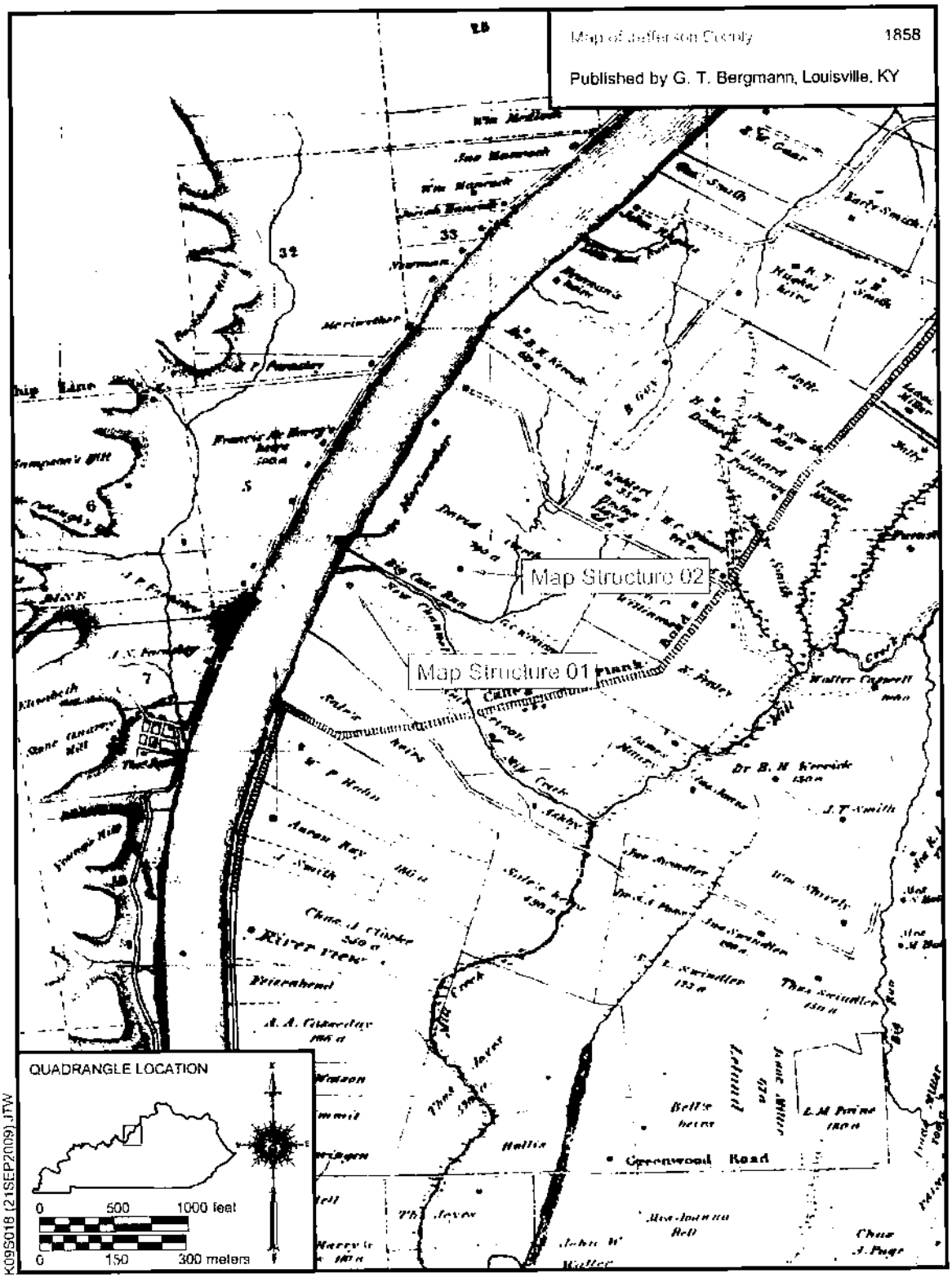

Figure 7. Structures depicted on the 1858 Map of Jefferson County, Kentucky.

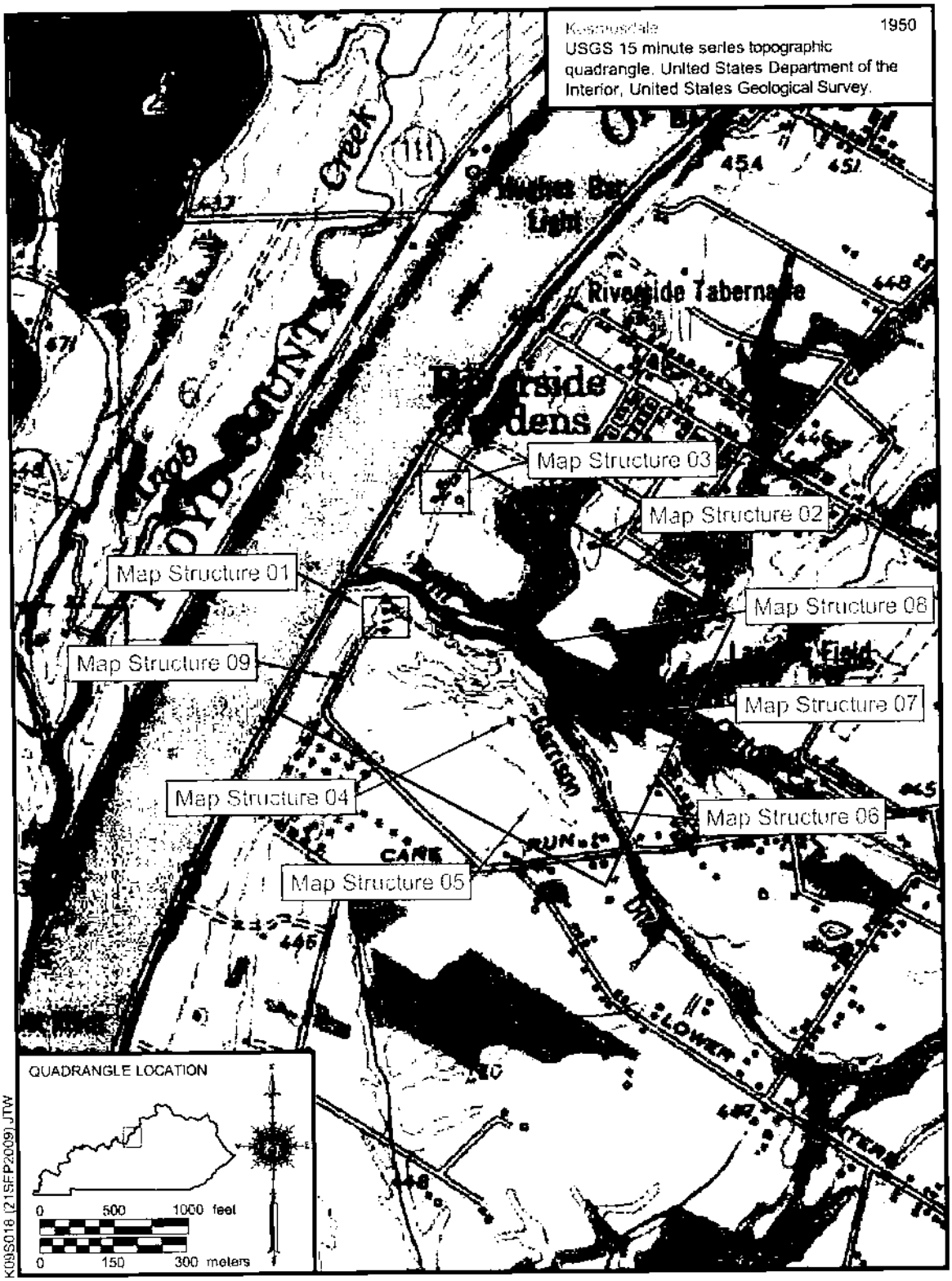

Figure 8. Structures depicted on the 1950 Kosmosdale, Kentucky/Indiana, 15-minute quadrangle.

These types of artifacts have been recovered from Clovis sites such as Holcombe Beach in Michigan (Fitting et al. 1966), Debert in Nova Scotia (MacDonald 1968), Martens in Missouri (Martens et al. 2004; Morrow 1998, 2000), and Topper in South Carolina (Goodyear and Steffy 2003).

Clovis components are not well represented in Kentucky, but they have been identified at sites such as Adams, Adams Mastodon, Big Bone Lick, Clay's Ferry Crevice, and Parrish (Tankersley 1996). The artifacts in the Clovis toolkit represent predominantly hunting, butchering, and hide-working activities. Bone tools (e.g., awls, needles, flakers, and possibly shaft straighteners) and ornaments are assumed to have been used but have not been recovered because of unfavorable environmental conditions (Griffin 1978:226).

Post-Pleistocene adaptive strategies were geared for coping with a harsh, but rapidly changing, environment. In general, Paleoindian sites are reflective of areas where small groups of people, perhaps no more than 50 individuals (Tankersley 1996:21), would perform specific tasks of short duration. This type of site casts a very low archaeological profile across the landscape. It has been argued that the earliest subsistence strategies in the eastern United States were not typified by a focus on the harvest of megafauna, but rather by a balanced hunting economy based on the exploitation of migratory game—especially caribou—and supplemented by foraged food (Fitting et al. 1966:103–104; Ritchie and Funk 1973:336; Tankersley 1996:22; Walker et al. 2001).

Archaic Period (8000–1000 B.C.)

As Griffin (1978:226) states, "a purely arbitrary division is made between the earlier fluted point hunter and their direct descendants," yet typological comparisons of artifact assemblages begin to take on distinctly regional characteristics with time. The Archaic period is customarily divided into three subperiods: Early (8000–6000 B.C.), Middle (6000–3500 B.C.), and Late (3500–1000 B.C.) (Jefferies 2008). By the Early Archaic, the last glaciers had retreated and the arctic-like boreal forest was developing into the eastern deciduous forest. By the Middle Archaic subperiod, the environment was much as it is today. This subperiod is marked by the introduction of groundstone tools, some of which have been interpreted as plant processing implements. At the beginning of the Late Archaic subperiod, the modern deciduous climax forest covered the entire eastern United States. In response to the changing environment and concurrent changes in plant and animal communities, Archaic period peoples developed a more diversified subsistence strategy that included a shift to exploitation of riverine ecosystems and, perhaps, the beginnings of a planned seasonal round exploitation strategy (Winters 1967:32).

The typical artifact assemblage representative of the Archaic period is composed of corner- and side-notched, or stemmed, hafted bifaces, increasing in both quantity and stylistic variation through time but accompanied by a decrease in quality of individual workmanship. Corner- and side-notched forms appear earlier in the sequence, whereas stemmed bifaces appear later (Jefferies 2008).

Judging from the greater frequency with which Late Archaic sites appear among sites that are recognized in the prehistoric record, a population increase may be postulated. Moreover, evidence of longer, more intensive site occupation suggests, in some cases, the possibility of extended habitation in parts of the state (Jefferies 2008).

Woodland Period (1000 B.C.–A.D. 900)

Griffin (1978:231) notes that during the Late Archaic subperiod there was "considerable evidence for the long distance movement of goods." The interregional movement of goods provided a structure for the transmission of information as well. During this period of interregional dynamism, there was a trend towards a more sedentary

lifestyle with increasingly elaborate burial ceremonialism and, possibly, stratified social organization. These trends, along with the appearance of fired ceramic vessels, mark the transition between Archaic and Woodland peoples (Griffin 1978).

The Woodland period, like the preceding Archaic period, is divided into three subperiods: Early Woodland (1000–200 B.C.), Middle Woodland (200 B.C.–A.D. 400), and Late Woodland (A.D. 400–900) (Applegate 2008). Overall, the Woodland period witnessed a continuation and elaboration of cultural practices that began during the Late Archaic subperiod. Woodland peoples became increasingly dependent on the cultivation of plant foods, which allowed for a more sedentary lifestyle. Except for the latter part of the Late Woodland subperiod, subsistence practices remained similar to the Archaic subsistence patterns, which is to say a combination of hunting, plant food gathering, and fishing in a seasonal round exploitation pattern. It is within the Woodland period that highly visible site types, such as mounds and enclosures, were constructed (Applegate 2008).

Late Prehistoric Period (A.D. 900–1650)

The Late Prehistoric period has been associated with Mississippian cultures that are more easily recognized in the Mississippi and parts of the Ohio and Illinois River valleys, although Mississippian influences were seen in a much larger geographic area (Pollack 2008). The Mississippian period was characterized by chiefdoms and intensive agriculture. Maize (*Zea mays*), beans (*Phaseolus vulgaris*), and squash (*Cucurbita* sp.) were the principle crops. Nevertheless, hunting and gathering continued to be important in many areas (Smith 1978).

Settlements were arranged in a hierarchical manner, were fortified, contained substructure mounds that were either for ceremonial purposes or dwellings for the elite, and were occupied year-round. Mississippian structures were built using wattle and daub construction, and the wall posts were set in trenches. Although there were continuously occupied villages in the settlement system, much of the Mississippian population lived in smaller hamlets and farmsteads scattered up and down the major rivers and secondary streams (Smith 1978).

Cultures with a similar level of development included the Pisgah in the Appalachian Summit, the Fort Ancient in the middle Ohio River area, and the Plaquemine of the lower Mississippi River area. Although a Late Woodland level of society continued in the Midwest, the Great Lakes, the Northeast, and the piedmont and coastal areas of the Middle Atlantic until European contact, some contact was made at the boundaries between the Mississippian cultural area and these regions. The Mississippian period is dated to A.D. 800 in the middle Mississippi River area. Between A.D. 900 and 1350, independent Mississippian societies developed in the surrounding regions. These societies lasted until circa A.D. 1550 (Geier 1992:279–280).

Protohistoric and Historic Aboriginal Period (A.D. 1650–1814)

By the beginning of the seventeenth century A.D., the Ohio River valley was populated by several sedentary cultural groups (Schwartz 1967). After 1680, the cultural fabric of these groups was severely stressed and then reshaped in the wake of shifting fur trade patterns (Hunt 1940), which resulted in the increasing displacement of resident Native-American groups by newly arriving Native Americans (Hunter 1978:588).

After A.D. 1724, Native-American tribes, who we can identify as the Shawnee, were present in the region, having been pushed westward from the east (i.e., from the Susquehanna drainage of Pennsylvania) by the expansion of European settlement (McConnell 1992:21). The origins of the Shawnee are not clear, but they can be identified on the Ohio River by A.D. 1750 (or later) at sites such as Bentley and Old Fort Earthworks (named for

the nearby Middle Woodland earthworks) (Henderson et al. 1986:131–137; Henderson et al. 1992:270–278; Pollack and Henderson 1984).

The conflicts between the Shawnee and other groups of the middle Ohio (e.g., Delaware, Miami, Piankashaw, and Wyandot) lasted through the War of 1812. They are a part of the conflict between the French and British and later the British and the new American Colonies (Hammack 1992:928–929; McBride and McBride 2008; O'Donnell 1992:815).

Historic Period

The first Europeans to visit Kentucky included explorers, trappers, traders, and surveyors. It was in the 1750s, when the English Crown attempted to colonize the Ohio Valley, that the first organized attempt to settle Kentucky occurred. This attempt stimulated the formation of land companies that sent surveyors into the area (McBride and McBride 2008:909). One of these, the Ohio Land Company, sent a surveyor into Kentucky in 1751. The French and Indian War that erupted in 1754 disrupted this early exploration (Talbert 1992:689).

In 1763, England's King George III set aside the land west of the Appalachians for Indians and English fur traders and closed the area to permanent settlement. His decree was ignored, however, and further colonial exploration and development could not be stopped. One man who took advantage of the commercial expansion westward was Daniel Boone. Boone first explored Kentucky in 1767, and by 1769, he had explored much of the Red and Kentucky River valleys. Harrodsburg was established soon after in 1774, followed by Boonesboro in 1775. The western movement of the American frontier pushed the Native Americans further and further west, and Kentucky was one of the places where they decided to take a stand. In response, Governor Dunmore (of Virginia) waged two large campaigns in the Ohio Valley (later known as Dunmore's War), and the Native Americans were defeated. Dunmore's War opened Kentucky for settlement, although some hostilities continued after this time (Nickell 1992:96–98; Stone 1992:571).

History of Jefferson County

Jefferson County is located in north-central Kentucky at the Falls of the Ohio River and is part of the Outer Bluegrass cultural landscape. It was one of the first three counties in Kentucky which, along with Lincoln and Fayette Counties, were formed from Kentucky County, Virginia, in 1780. These three counties became the Commonwealth of Kentucky on June 1, 1792 (Clark 1992). Jefferson County is named for Thomas Jefferson, who was governor of Virginia at the time of its creation.

Originally, Jefferson County contained 20,202 sq km (7,800 sq mi) of land between the Green and Ohio Rivers. Today, it has an area of 997 sq km (385 sq mi), and is surrounded by Oldham, Shelby, Spencer, and Bullitt Counties (Kleber 1992:464). The county seat of Jefferson County is Louisville.

Long before the settlement of Jefferson County, European-American speculators were interested in the lands adjacent to the Falls of the Ohio. This mile-long rapid over a Devonian coral reef was the only natural barrier to navigation on the Ohio-Mississippi River system between modern Pittsburgh and New Orleans. It was an ideal place for a settlement because all river traffic had to stop at that point. (Kleber 1992:305). In 1774, Virginia sent surveyors from Fincastle County, Virginia, to Kentucky to locate land grants for veterans of the French and Indian War. In May, they arrived at the Falls and surveyed 16,187 ha (40,000 acres), including most of what is now the city of Louisville and eastern Jefferson County (Kleber 1992:318; Yater 1987:12). As a result of the military warrants issued for these land grants, John Connolly, a Pennsylvania native and former surgeon's mate in the British army, obtained 809 ha (2,000 acres) on the south side of the Falls in what is now downtown and western Louisville (Kleber 1992:224).

In spite of Connolly's land grant and his intention to lay out a town by selling half-acre lots to potential settlers, the Falls area was not settled until the late 1770s due to Indian hostilities and the outbreak of the American Revolutionary War (Yater 2001a:xv). Settlement steadily began in 1778, however, when Lieutenant Colonel George Rogers Clark of Virginia led an expedition down the Ohio River to capture British posts north of the river at Kaskaskia, Vincennes, and Detroit (Kleber 1992:195). In May, the expedition halted at Corn Island at the head of the Falls to await reinforcements. When the main army moved down river in June, a group of camp followers and military personnel remained behind on the island. Later that year, the Corn Island settlers moved ashore, and their cluster of cabins became the foundation for the modern-day city of Louisville (Wade 1959:14–15; Yater 1987:2–6).

Before a town could develop at the site, however, the 1774 claim of John Connolly had to be addressed. Connolly had become a Tory (i.e., a British loyalist) during the Revolution, and consequently, the Court of Kentucky County ignored his claim and permitted the town of Louisville to be laid out on his grant in 1779. In 1780, the Virginia legislature formally voided Connolly's grant (Wade 1959:15). The town, however, did not live up to its expectations. It developed a reputation for disease, and as a result, most new arrivals moved into the countryside via three branches of Beargrass Creek. By 1800, Louisville had only 359 inhabitants (Wade 1959:17).

Settlers came to Jefferson County along two main routes. Some settlers took flatboats from some point on the upper Ohio and landed at the mouth of Beargrass Creek. Other settlers came through the Cumberland Gap and up the western branch of the Wilderness Road. Another area of early settlement was along what is now the county's southwest border in the Salt River Valley, where salt makers established the county's first significant industry (Kleber 1992:465).

During the 1780s, most of the early pioneers settled near or within seven fortified "stations" in the Beargrass watershed. As the threat from Native Americans gradually declined, however—the last raid on the county was in 1789—settlers left the stations to establish farms. Incidentally, by the 1790s, with Native American attacks along the Ohio River subsiding, the river route became far more popular than the old trail through the mountains (Yater 1987:2–5).

Most of Jefferson County's early settlers came from Virginia, North Carolina, and Pennsylvania and were of English, Scots-Irish, or German background. Many enslaved African Americans also arrived with their masters. Wealthy Virginians quickly came to dominate the social and political order, controlling the best land and the political system. As a result, yeoman farmers often had to lease, or settle for the more rugged terrain on the edge of the large estates (Kleber 1992:465).

During the 1790s, two towns were founded in the eastern part of Jefferson County as potential rivals to Louisville. In 1784, William White built a house in eastern Jefferson County and later laid out Middletown on the site. In 1797 Abraham Bruner founded Jeffersontown, which was settled primarily by Pennsylvania Germans (Kleber 1992:465; Rennick 1984:152, 196).

Before 1810, Louisville and Jefferson County developed more slowly than the more populous Inner Bluegrass region around Lexington. The arrival of the steamboat on the western waters in the 1810s, however, set a transportation and economic revolution in motion that brought boom times to Louisville and the Falls region. In 1817, there were 17 steamboats, totaling 3,290 tons, on the Ohio-Mississippi system. By 1830, there were 187 boats with a total tonnage of 29,481. In 1829, over 1,000 steamboat landings were made at Louisville. This stimulated the growth of a wide range of businesses, including taverns, hotels, distilleries, hemp-processing factories, machine shops, and warehouses. Between 1810 and 1820, Louisville's population tripled to 4,012. Louisville's boom continued into the next decade, while land-locked Lexington's

economy stagnated. By 1830, Louisville was the commonwealth's largest city with a population of 10,000 people. In 1845, the population had increased to 37,218. Of the 37,218 people living in Louisville in 1845, 32,602 (87.6 percent) were white, 4,056 (10.9 percent) were enslaved African Americans, and 560 (1.5 percent) were free blacks (Williams & Co. 1882:264, 294).

During the antebellum years, Jefferson County's farmers were among the state's most productive. In 1850 they led in the value of animals slaughtered, production of hay, market gardening, and orchards (Kleber 1992:465). Germans who had arrived in the county in great numbers in the 1840s and 1850s owned many of these farms (Kleber 1992:465). The strength of the agricultural sector encouraged investment in processing industries. During the 1850s, Louisville was the second largest pork packing center in the nation, butchering over 300,000 hogs a year (Yater 1987:75).

Trade was also an important aspect of the county's economy during the antebellum years. In the 1840s, James Guthrie, an attorney and state legislature who took a steadfast interest in promoting developmental progress in Louisville, led a movement in the city's business community to improve trade through the construction of railroads. Consequently, the Louisville and Frankfort Railroad opened in 1851. More important, however, was the opening of the Louisville and Nashville Railroad in 1859. This greatly strengthened the city's ties to the southern economy (Kleber 1992: 578–579; Yater 1987:75, 2001b:362–363).

The approach of the Civil War brought new challenges to the people of Jefferson County, and Louisville in particular. While Kentucky was a slave state, and cities such as Louisville had become prosperous off of Southern trade, business ties with the North challenged the city's allegiance to the Southern cause. Political conflicts arose in Louisville between Union and Confederate sympathizers, and although Kentucky eventually cast its lot with the Union, Southern sentiments continued to pervade various segments of the population (McDowell 1962:3). Due to these conflicting sentiments, Union-supportive Kentucky legislators passed a series of resolutions in 1861 that made it a misdemeanor for Kentucky residents to enlist in the Confederate army while in the state, made invasion of the state by Confederate soldiers a felony, and authorized the enlistment of 40,000 Union volunteers (Miller 1990:465). Incidentally, numerous German immigrants, many from Louisville, willingly volunteered to fight for the Union army during this surge in enlistment (Miller 1990:467).

During the Civil War, Louisville became perhaps the most important Union stronghold in the western theater. As an important port on the Ohio River and the northern terminus of the strategic Louisville and Nashville Railroad, it was essential that the Union Army hold the city if it was to hold Kentucky. In September 1862, the Confederate armies of Generals Braxton Bragg and Kirby Smith invaded Kentucky. The Union army of General Don Carlos Buell followed Bragg and beat the Confederates in the race to Louisville. On October 8, Buell won a narrow victory over Bragg at the Battle of Perryville, and the Confederates withdrew into Tennessee. Louisville had been saved and, perhaps, so had the Union cause in the West (Hafendorfer 1991).

The end of the Civil War brought profound social and economic change to Louisville. After Appomattox, thousands of former slaves flocked to the city in hopes of being formally set free. Although this trend was witnessed in other cities as well, in Louisville alone it was estimated that more than 200 emancipated African-American slaves arrived on a weekly basis (McDowell 1962:200). The arrival of so many freed African Americans did little to ameliorate racial tensions between whites and blacks. Instead, violence against African Americans became widespread, and antebellum segregationist policies were reinforced in order to maintain white supremacy and

African-American oppression (Cummings and Price 1997:617).

Louisville also attracted a significant number of former Confederate officers who did not want to live in the occupied South after the war. These new arrivals found a city unscathed by war and in the midst of robust economic growth. For these ex-Confederates, Louisville offered the opportunity to reestablish themselves in business, politics, and cultural affairs, and many were able to quickly gain respect and prestige within a few short years (Cummings and Price 1997:617). Their social standing in the city had a negative impact on the newly freed African Americans, however, as the majority of these ex-Confederates supported segregationist policies and reinforced white supremacy.

During Reconstruction, Louisville's economy expanded, with the manufacture of steam engines and boilers being the largest industry, employing 2,236 workers by 1870 (Yater 1987:102). In 1867, as perhaps the most telling sign of this progress, the Louisville and Nashville Railroad began the longest iron bridge in the United States over the Ohio River at the Falls. The bridge was dedicated in 1870 (Yater 1987:95–96, 99–100). That same year, Louisville's third charter was approved, and the population increased to 100,753 (Work Projects Administration 1940:32). Although a stronghold on Southern trade became a point of contention between the cities of Louisville and Cincinnati, eventually it was generally divided between the two. Nevertheless, Southern sympathies and distrust of the North did not sway Louisville propagandists from accusing Cincinnati of trying to rob Louisville of its trade and for being a hotbed of radicalism (Share 1982:69).

The last two decades of the nineteenth century sparked a significant increase in strained social relations between whites and blacks in the Louisville. Residential segregation became more pronounced, as more and more whites moved out of the inner city to the suburbs, and African Americans moved into the center of town. One of the reasons why this development occurred after 1880 was due to revolutionary advancements in mass transportation. Streetcars made commuting possible and made it feasible for whites to move to cleaner and quieter "streetcar suburbs" (Share 1982:96). This revolution, combined with the increasing housing shortage and racist attitudes towards blacks, resulted in African Americans being relegated to poorer housing areas in the inner city. While the county seat became an industrial center and continued to struggle with social issues over the turn of the twentieth century, most of Jefferson County remained rural farmland. Not until the 1920s did the suburbanization that began in the 1880s begin swallowing up large tracts of farmland.

During World War I, a major migration of African Americans from the south to the industrial north began. European immigration was curtailed by the nature of the hostilities, and industries in the north were in a labor shortage. Hence, many African Americans migrated to northern cities, such as Detroit, and Louisville's black population decreased somewhat (about 1.1 percent) with this surge in the northern industrial labor market (Adjei-Barwuah 1972:31; Collins 1950:50). Although this percentage does not seem significant, it is notable because it was the first time since the city was established that there had ever been a population decrease in the number of African Americans in the city (Collins 1950:53). During the Great Depression, migration to the north decreased significantly. However, once World War II began, the surge began anew.

After the Second World War, suburbanization and industrial growth boomed at an unprecedented pace. Between 1950 and 1960, the county population outside Louisville city limits nearly doubled to 220,308. By 1960, some 30 independent suburban cities ringed Louisville. The arrival of the interstate highway made it possible to live in the county and commute downtown (Kleber 1992:466).

Social change came as well. In 1945, most of the county's black population lived in Louisville, which was essentially a southern

segregated city. Under the administration of Mayor Charles Farnsley (1948–1953), the city began a slow process of dismantling Jim Crow laws. The public library, major hospitals, and all the county colleges were integrated. Farnsley's successor, Andrew Broaddus, integrated public parks. Nevertheless, the process was slow. In 1975, the federal courts ordered busing to integrate what was still a de facto segregated schools system (Yater 1987:219, 244).

The last half of the twentieth century witnessed great economic growth and the development of manufacturing in the county. In 1951, the General Electric Company announced that it was moving its home appliance manufacturing operation to Jefferson County. Before the end of the decade, GE employed more than 16,000 workers at the plant. In 1969, the Ford Motor Company opened the world's largest truck plant in eastern Jefferson County, creating over 4000 jobs. Finally, during the 1980s, United Parcel Service developed its principal distribution center at Louisville's Standiford Field. By 1972 the county suburbs had exceeded the city in population. Jefferson County is, by far, the state's largest metropolitan area, with a population of 665,123 in 1990 and 693,604 in 2000 (Kleber 1992:467; U.S. Bureau of the Census 1990, 2000; Yater 1987:220, 229, 247).

IV. METHODS

This section describes the methods used during the survey. Site-specific field methods are discussed in further detail in the Site Description section of this report. Laboratory methods specific to the individual analyses are discussed in the specific analysis sections of this report.

Field Methods

The survey area included a proposed borrow location, settling ponds, and a flyash storage area. The project area was determined by mapping provided by Stantec Consulting, Inc., and one of their engineers assisted with locating the project area. The entire project was subjected to an intensive pedestrian survey supplemented by shovel testing, bucket augers, and backhoe testing.

The pedestrian survey and shovel testing were conducted by surveying transects spaced 20 m apart across both parcels of the project area. As previously mentioned, many portions of the survey area were previously disturbed. Those areas that had good visibility were inspected for cultural material. Steep sideslopes were inspected for natural benches and overhangs. Dirt roads and all exposed areas were walked and visually examined for indications of cultural material and features.

Shovel testing was conducted on undisturbed, relatively flat terrain with poor surface visibility. These areas included ridgetops, terraces, and floodplains. Additionally, bucket auger testing was utilized on the southwest floodplain of Garrison Ditch and Mill Creek Cutoff. All soil was screened through .64-cm (.25-in) mesh hardware cloth. Figure 3 depicts the survey methods used in the project area.

When a site was encountered, a Magellan Mobile Mapper 6 Global Positioning System (GPS) unit was used to confirm the site's placement within the project area. Shovel tests were conducted at 10-m intervals around positive surface finds to determine site boundaries and artifact density.

A site sketch map of each site was created depicting the location of all shovel tests, areas of surface collection, features, project boundaries, site boundaries, and other physiographic features. A datum was placed and GPS data collected for its location. A Magellan Mobile Mapper was utilized for collecting all field GPS data.

Surface Collection

Surface collection was used at 15Jf763 to initially examine the artifact classes present, the density of these materials, and their distribution within the Ap horizon. Surface collection was employed if surface visibility in the project area was greater than 20 percent.

Because all of the artifacts that were observed on the surface were within a small area (less than 10 m in diameter), they were collected and bagged as a general surface collection. Larger materials (e.g. concrete block, building stones) that were not collected were plotted with a GPS unit. The site datum was mapped using a GPS unit.

Shovel Testing

When artifacts were encountered on the ground surface at 15Jf763, additional tests were excavated at 10-m intervals in all cardinal directions, except east, to define the limits of cultural remains.

In all cases, shovel tests measured not less than 35 cm in diameter and extended well into subsoil. Shovel tests were excavated in levels. The Ap horizon was removed as one level. After the Ap horizon was removed, 10-cm arbitrary levels were excavated. All fill removed from the tests was screened through .25-inch mesh hardware cloth, and the sidewalls and bottoms were examined for cultural material and features. No artifacts were recovered from shovel tests.

Bucket Augering

Bucket augering during the current survey was conducted primarily in alluvial soils to determine the possibility of buried deposits and to verify that the majority of the survey area had been previously disturbed. A hand-operated bucket auger with a 4-inch opening was used to excavate augers on transects with 20-m intervals between tests and in apparently undisturbed areas. Sediments were removed in approximately 10-cm levels. All soil was screened through .25-inch mesh hardware cloth. General soil characteristics (e.g., texture or Munsell colors) were recorded by individual level. No buried soils, artifacts, or charcoal layers were noted in the auger tests.

Backhoe Trenches

As part of the original scope of work for this project, backhoe trenches were planned to better define the nature of the buried deposits in the project area, to examine deep undisturbed alluvial soils, and to assess the potential for deeply buried archaeological sites. Upon arrival, it quickly became clear that there were few undisturbed soils in the project area. As such, the majority of deep subsurface testing was conducted with bucket augers, which as noted in the previous section, indicated that the project area was heavily disturbed by recent and historic activities and held little potential for deeply buried archaeological resources.

As part of the soil survey, an engineer from Stantec Consulting, Inc., excavated backhoe trenches throughout the project area. Several of the trenches in the northern parcel and other exposed subsurface areas in the southern parcel were examined by CRA personnel (Figure 9). These trenches were typically between 1.5 and 2.0 m deep. All of the soils in the trenches appeared to be homogenous subsoils that were now close to the surface due to previous soil removal and erosion. No buried surface soils (A horizons), archaeological concentrations, or features were noted in any of the trenches. Upon completion of the subsurface reconnaissance, all trenches were backfilled.

Laboratory Methods

All cultural material recovered from the project was transported to CRA for processing and analysis. Initial processing of the recovered artifacts involved washing all artifacts, sorting the artifacts into the major material classes (i.e., ceramic, glass, and metal) for further analysis, and assigning catalog numbers. Catalog numbers consisted of the site number and a unique number for each provenience lot or diagnostic specimen. Historic artifacts received a unique catalog number for each material group and class by provenience.

The methods, specifics, and results of subsequent analysis are discussed in each of the specific analysis sections of this report. All cultural materials, field notes, records, and site photographs will be curated at the University of Louisville in Louisville, Kentucky.

Figure 9. Borrow pit at Cane Run Generating Plant showing homogenous subsoil profile.

V. MATERIALS RECOVERED

Jennifer M. Faberson

Historic materials were recovered from one site, 15Jf763. The assemblage is described below. In addition, an inventory of materials recovered from this site listed by provenience is presented in the site description section of this report.

Methods

The historic assemblage includes artifacts classified and grouped according to a scheme originally developed by Stanley South (1977). South believed that his classification scheme would present patterns in historic site artifact assemblages that would provide cultural insights. Questions of historic site function, the cultural background of a site's occupants, and regional behavior patterns were topics to be addressed using this system.

South's system was widely accepted and adopted by historical archaeologists. However, some have criticized South's model on theoretical and organizational grounds (Orser 1988; Wesler 1984). One criticism is that the organization of artifacts is too simplistic. Swann (2002) observed that South's groups have the potential to be insufficiently detailed. She suggested the use of sub-groups to distinguish between, for example, candleholders used for religious purposes and those used for general lighting. Others, such as Sprague (1981), have criticized South's classification scheme for its limited usefulness on late nineteenth- and early-twentieth-century sites, sites which include an array of material culture—such as automobile parts—not considered by South. Despite its shortcomings, most archaeologists recognize the usefulness of South's classification system to present data.

Stewart-Abernathy (1986), Orser (1988), and Wagner and McCorvie (1992) have subsequently revised this classification scheme. In this report, artifacts were grouped into the following categories: domestic, architecture, clothing, and personal. The artifacts recovered during this project are summarized in Table 2.

Table 2. Historic Artifacts Recovered According to Functional Group.

Group	Total	Percent
Architecture	1	4.17
Clothing	2	8.33
Domestic	18	75
Personal	3	12.5
Totals	**24**	**100**

Grouping artifacts into these specific categories makes it more efficient to associate artifact assemblages with historic activities or site types. One primary change associated with the refinement of these categories is reassigning artifacts associated with the "Miscellaneous and Activities" under South's (1977) original system. Considering the potential variety of historic dwellings and outbuildings within the project area, a refinement of the artifact groupings was considered important to perhaps observe whether the distribution of specific artifact groups would produce interpretable patterns related to activity areas or structure types. Each one of these groups and associated artifacts is discussed in turn.

Information on the age of artifacts as described in the artifact tables is derived from a variety of sources cited in the discussion of the materials recovered. The beginning and ending dates cited need some clarification. Usually, an artifact has specific attributes that represent a technological change, an invention in the manufacturing process, or simple stylistic changes in decoration. These attribute changes usually have associated dates derived from historical and archaeological research. For example, bottles may have seams that indicate a specific manufacturing process patented in a certain year. The bottle then can be assigned a "beginning," or incept, date for the same year of the patent. New technology may eliminate the need for the same patent and the bottle would no longer be produced. The "ending," or terminal, date will be the approximate time when the new technology took hold and the older manufacturing processes are no longer in use.

Specific styles in ceramic decorations are also known to have changed. Archaeological and archival researchers have defined time periods when specific ceramic decorations were manufactured and subsequently went out of favor (e.g., Lofstrom et al. 1982; Majewski and O'Brien 1987). South's (1977) mean ceramic dating technique uses this information. The dates presented here should not be considered absolute but are the best estimates of an artifact's age available at this time. A blank space indicates that the artifact could not be dated or, alternately, that the period of manufacture was so prolonged that the artifact was being manufactured before America was colonized. An open-ended terminal date was assigned for artifacts that may be acquired today. The rationale for presenting dates for the artifacts recovered is to allow a more precise estimate of the time span the site was occupied, rather than the mean occupation date of a site.

A summary of the artifacts recovered follows. A complete inventory of the historic artifacts can be found in Appendix B.

Materials Recovered by Functional Group

There were 24 historic artifacts recovered during the current survey (Figure 10). The following provides a descriptive discussion of the types and age of artifacts recovered from Site 15Jf763.

Architecture Group (N = 1)

The architecture group is comprised of artifacts directly related to buildings and those artifacts used to enhance the interior or exterior of buildings. Only one construction material artifact was recovered during the current survey.

Construction Materials (n = 1)

Construction materials refer to all elements of building construction. For this project, only one building material fragment was recovered. This item was identified as cut marble and was not assigned a specific date.

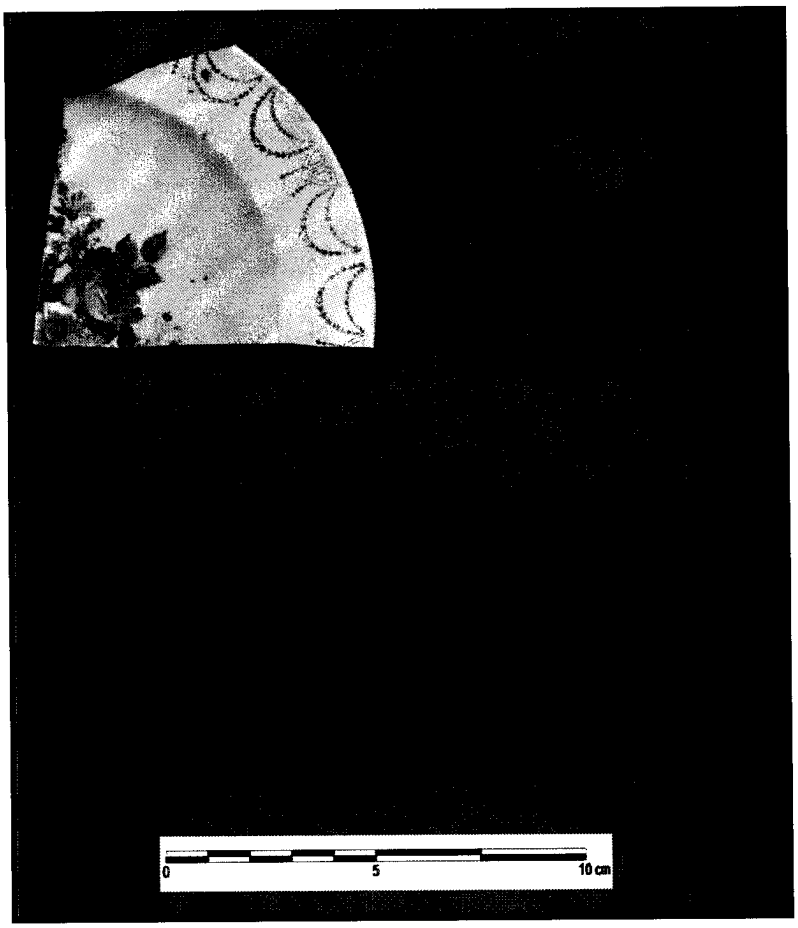

Figure 10. A selection of the artifacts recovered from Site 15Jf763. (a) decal-decorated ironstone with gilt accents; (b) mason zinc canning jar lid with glass liner; (c) iron/steel toy train car.

Clothing Group (N = 2)

The clothing group includes buttons, clothing fasteners, footwear, and other clothing related items, such as belts, hats, and fabric. Two footwear items were recovered from the current project area. Both of these were identified as rubber shoe heel fragments.

Footwear can be categorized into two types: turned shoes and shoes whose upper is attached to the insole and then reinforced by the heel and outsole. The upper portion of a turned shoe is sewn inside out to a thin sole, then it is turned right side out. At present, turned shoe manufacture has been predominantly replaced by the cementing process, but historically this form thrived.

Before 1812, in the western world, shoes were made by using hand-driven wooden pegs to join soles and uppers. By 1822, a German shoe maker, named Brecht, conceived the use of screws for joining shoe soles and uppers (IMACS 2001). Until the mid-nineteenth century, the footwear industry remained a predominantly manual activity involving the use of little to no machinery (Miranda 2004:195). Some modernization had taken place during the first half of the nineteenth century, including the use of new tools, the standardization of lasts, and the pegged shoe. The first machines, used to prepare and cut the leather for the upper and the sole, were introduced during this time (Miranda 2004:196). Shoe-nailing machines, perfected by Nathaniel Leonard in 1829, drove wire into

the shoe fragments, which the machines then cut and subsequently, in some instances, headed. The presence of actual square cut iron or brass nails in a shoe dates it post-1812. Metal fasteners in a shoe date it post-1800 and most likely post-1829 (IMACS 2001).

After the 1850s, the most significant technical innovations in the footwear industry leading to mechanized production occurred. The development of the "Goodyear Welt" sewing machine technique of shoe manufacture between 1862 and 1890, as well as the all rubber heel of 1895, are two of the most datable changes (IMACS 2001; Miranda 2004:197). Since the footwear items recovered from the current project did not contain any distinguishable characteristics, they were not assigned specific dates.

Domestic Group (N = 18)

Artifacts included in the domestic group consisted of ceramics (n = 2), container glass (n = 9), glass tableware (n = 3), and container closures (n = 4).

A full description of ceramic types recovered from the project area is listed below, followed by descriptions of other domestic group artifacts.

Ceramics (n = 2)

The ceramics recovered were grouped into two major ware types: ironstone (n = 1) and porcelain (n = 1). Each of these ware groups is reviewed below, followed by discussions of associated decorative types.

Ironstone (n = 1)

Ironstone is a white or gray-bodied, refined stoneware with a clear glaze. It is often indistinguishable from whiteware. Ironstone differs from whiteware in that the body is more vitreous and dense. In addition, a bluish tinge or a pale blue-gray cast often covers the body. In some cases, a fine crackle can be seen in the glaze; however, this condition is not as common as it is in whiteware (Denker and Denker 1982:138).

Confusion in the classification of white-bodied wares is further compounded by the use of the term as a ware type or trade name in advertising of the nineteenth century. Both ironstones and whitewares were marketed with names such as "Patent Stone China," "Pearl Stone China," "White English Stone," Royal Ironstone," "Imperial Ironstone," "Genuine Ironstone," "White Granite," and "Granite Ware" (Cameron 1986:170; Gates and Ormerod 1982:8). These names do not imply that true ironstone was being manufactured. Some investigators avoid the distinctions entirely by including ironstones as a variety of whiteware. Others, however, such as Wetherbee (1980), refer to all nineteenth-century white-bodied earthenwares as ironstone. For this analysis, the primary determining factor in classification of a sherd as ironstone was the hardness and porosity of the ceramic paste. Sherds with a hard vitreous paste were classified as ironstone.

Charles James Mason is usually credited with the introduction of ironstone (referred to as Mason's Ironstone China) in 1813 (Dodd 1964:176). Others, including the Turners and Josiah Spode, produced similar wares as early as 1800 (Godden 1964). As a competitive response to the highly popular oriental porcelain, British potters initiated this early phase of ironstone production. The ironstone of this early phase bears a faint blue-gray tint and oriental motifs, much like Chinese porcelain. A second phase of ironstone began after 1850 in response to the popularity of hard paste porcelains produced in France. This variety of ironstone had a harder paste and reflected the gray-white color of French porcelains.

While some ironstones continued to use oriental design motifs after 1850, the general trend was toward undecorated or molded ironstones (Collard 1967:125–130; Lofstrom et al. 1982:10). Ironstone continued to be produced in England, and after 1870, it was also manufactured by numerous American companies. For many years, classic ironstone—the heavy, often undecorated ware—had been frequently advertised as being affordable and suitable for "country trade" (Majewski and O'Brien 1987:121). By the late 1800s, these thick, heavy ironstones began

losing popularity and were often equated with lower socioeconomic status (Collard 1967:13). At the same time, ironstone manufacturers began shifting to thinner, lighter weight ironstones. As a result, this type of ironstone became popular tableware in American homes during most of the twentieth century (Majewski and O'Brien 1987:124–125). In spite of the shift towards thinner and lighter ironstones, heavy ironstone remained on the market and continues to be popular in hotel/restaurant service (hence, this heavy, twentieth-century ironstone is sometimes called "hotelware"). However, its production for home use all but ceased by the second decade of the twentieth century (Lehner 1980:11).

Only one ironstone fragment was recovered from the project area. This fragment was decal-decorated ironstone with gilt accents. This ironstone fragment also contained a maker's mark used by the Pope-Gosser China Company from 1930 to 1958 (Kovel 1986:199).

Porcelain (n = 1)

Porcelain is the name given to high-temperature fired, translucent ware. This ware type was first developed by the Chinese. Chinese, or hard paste, porcelain was introduced to Europe by Portuguese sailors that had traveled to China during the sixteenth century. The formula for true, or feldspathic, porcelain was not discovered in Europe until 1708 and not marketed until 1713 (Boger 1971:266). The production of true porcelain was limited to three factories in England; all other products were softer porcelains made with glass, bone ash, or soapstone. Porcelain made with bone ash, often called "bone china," became the preferred product after 1800, since the paste was harder and the ware was cheaper to produce with bone than with glass or soapstone (Mankowitz and Haggar 1957:179). Among the more affluent households in Europe and North America, porcelain was a common tableware used during the eighteenth and nineteenth centuries (Fay 1986:69). Porcelain production in America was not successful until 1826, and the number of porcelain factories in the United States remained small throughout the nineteenth century.

In the lab, bone china can be differentiated from hard paste porcelain by placing it under ultraviolet light. Bone china fluoresces blue-white, whereas hard paste porcelain fluoresces magenta (Majewski and O'Brien 1987:128).

Only one porcelain vessel was recovered during the current project. This fragment was decal decorated with an overglaze hand-painted decoration. This vessel also contained a maker's mark utilized by the Noritake China Company after 1911 (Kovel 1986:74).

Container Glass (n = 9)

A variety of container glass was recovered during the current survey. Research by Baugher-Perlin (1982), Jones and Sullivan (1985), and Toulouse (1972) was used to date glass containers. Glass color was the only attribute that could be used for dating those fragments that were not identifiable as to type of manufacture.

The approximate date of manufacture for bottles and bottle fragments recovered from the project area was established by determining the manufacturing process associated with the bottle (i.e., creation of the base and lip of the container) and using any patent or company manufacturing dates embossed on the bottle.

The lip on a bottle can be informative. A lipping tool, patented in the United States in 1856, smoothes and shapes the glass rim into a more uniform edge than a hand-smoothed lip or "laid-on ring." Certain types or styles of lips were associated with specific contents; for example, medicines were often contained in bottles with prescription lips (Jones and Sullivan 1985). A "sheared," or unfinished, bottle lip typically dates before 1880.

Lipping tools were used throughout the middle and end of the nineteenth century until the advent of the fully automatic bottle machine (ABM) in 1903. It should be noted, however, that as automated bottle manufacture became available after the turn of the

twentieth century (see below), tooled finishes continued to be produced—albeit in steadily decreasing numbers. That is, there is a lag time between tooled finishes and ABM finishes, and although ABM glass is given an incept date of 1903, most tooled-glass vessel sherds will be given a terminal date around the 1920s due to this lag time, unless other diagnostic characteristics are observed, enabling one to give it an earlier terminal date.

The manufacturing process can be roughly divided into three basic groups, including free blown, blown in mold (BIM), and machine manufactured (ABM) vessels (Baugher-Perlin 1982:262–265). Only ABM glass was recovered from the current project.

Automatic Bottle Machine (ABM) (n = 9)

The Owens automatic bottle-making machine was patented in 1903 and creates suction scars and distinctive seams that run up the length of the bottle neck and onto the lip. This ABM mold provides a firm manufacturing date at the beginning of the twentieth century. Another automatic bottle machine called the Individual Section was also used in the commercial production of bottles. This machine was widely used starting in 1925 and by 1940 became the most widely used bottle manufacturing device (Jones and Sullivan 1985:39). This bottle machine was more cost effective than the Owens machine, which was no longer used after 1955.

There were nine glass fragments assigned to the ABM category during the current project, and many of these had multiple distinguishing characteristics. Two base types were found, including Individual Section molds and Owens molds. Two Individual Section molds were recovered, including one amber and one light green glass base. The light green Individual Section mold dated after 1925 (Jones and Sullivan 1985:39, Miller and Sullivan 1984:94). The amber Individual Section mold also contained a makers mark used by the Foster-Forbes Glass Company in Marion, Indiana, after 1929 (Toulouse 1972:197). Three Owens mold bases were also recovered. These were all clear glass, and two of these contained maker's marks. The first maker's mark was utilized by the Owens Illinois Glass Company from 1929 to 1954 (Toulouse 1972:403). The second mark was also used by the Owens Illinois Glass Company, but was used from 1940 to 1954 (Toulouse 1972:403).

One body type was recovered. Four embossed sherds were recovered. Three of these were clear glass, and one was amber glass. One finish type was also recovered during the current survey. All of these were external thread finishes and included one amber, one cobalt, and six clear rims. Unless otherwise noted, glass assigned to the ABM category was dated from 1903 to the present.

Glass Tableware (n = 3)

Press molding was first used (although on a very small scale) in England in the late seventeenth century to make small solid glass objects, such as watch faces and imitation precious stones (Buckley 1934). By the end of the eighteenth century, decanter stoppers and glass feet for objects were also being produced (Jones and Sullivan 1985). The production of complete hollowware glass objects did not become possible until there were innovations in press-molded techniques in the United States during the late 1820s (Watkins 1930). Mass production of press-molded glassware was well established by the 1830s (Watkins 1930).

Earlier press-molded glass objects were predominately made of colorless lead glass (Jones and Sullivan 1985). William Leighton of the Hobbs-Brockunier Glass Works in Wheeling, West Virginia, invented lime glass. This type of glass looked like lead glass, had superior pressing attributes, and was much more inexpensive than lead glass (Revi 1964). Advancements in mold technology in the 1860s and 1870s led to the application of steam-powered mold operation. This in turn led to increased production and reduced costs (Revi 1964). Modern press molding is conducted entirely by machine (Jones and Sullivan 1985).

Press-molded table glass was made by dropping hot pieces of glass into a mold. A

plunger was then forced into the mold, pressing the hot glass against it. The outer surface of the glass took on the form of the mold, while the inner surface of the glass was shaped by the plunger. The plunger was withdrawn and the glass object was removed from the mold. The surface of the glass was often fire polished to restore the brilliance of the glass surface that was disturbed by its contact with the mold (Jones and Sullivan 1985).

Press-molded glass may be recognized by several characteristics. Usually, the glass object must be open-topped in order for the plunger to be withdrawn from the mold. Narrow mouthed vessels were produced, but additional manipulation of the glass was necessary after the plunger was removed from the mold. Evidence of this manipulation should be present on the vessel (Jones and Sullivan 1985). There is no relationship between the exterior shape and design of a press-molded vessel to the interior shape and design, because the plunger shapes the interior of the object, most often leaving behind a smooth surface. This differs from earlier glass vessel production techniques, like blown glassware, where interior shape was related to the exterior shape and design (Jones and Sullivan 1985).

Another characteristic of press-molded containers was that mold seams were generally present. The seams were sharp and distinct, unless steps had been taken to deliberately remove them. The texture of the glass surface of press-molded glass was disturbed and often disguised by an all-over stipple design. The edges of the designs on press-molded glass had a predisposition toward rounded edges. The bases of press-molded objects were usually polished. The quality of the designs on press-molded glassware was precise, and the design motifs were numerous (Jones and Sullivan 1985).

In contrast to press-molded glass, cut glass generally had a polished, smooth, and glossy surface texture. The design edges were sharp and distinct. Cut glass designs consisted mostly of panels, flutes, and miters. The designs were often slightly uneven and asymmetrical. Mold seams were usually absent; they were polished off prior to cutting (Jones and Sullivan 1985). Contact-molded glass also differs from press-molded glass in that the exterior and interior of the vessel will portray parallel patterns. The interior of the vessel is also generally much more diffuse towards the base.

Three pieces of glass tableware were recovered during the current survey. Of the identifiable fragments, all were press molded (n = 3). All of these fragments were also clear glass dating after 1864 (Jones 2000).

Closures (n = 4)

Bottle closures serve both to prevent the spilling of a bottle's contents and to protect a bottle's contents from contamination and evaporation (Berge 1980). Closures have been used almost as long as animal skins and bottles have been employed to contain liquids. Closures range from a utilitarian piece of paper or cloth stuffed into the mouth of a bottle to a delicately crafted crystal stopper for a decanter. There are three primary closure types: caps, stoppers, and seals (Berge 1980).

Caps are secured to a bottle by overlapping the outside edge of the finish or mouth. Common cap types include external screw, lugs, crown, and snap-on. External screw caps were first introduced in the mid-nineteenth century (Jones and Sullivan 1985; Toulouse 1977). External thread caps were attached to bottles by means of grooves in the cap that screwed down on continuous glass threads on the finished exterior of a bottle. External thread caps were first produced using metal in 1858 (Jones and Sullivan 1985; Toulouse 1977). Advances in technology led to the introduction of a Bakelite external thread cap around 1922 (Berge 1980; Meikle 1995), an aluminum shell roll-on cap in 1924 (Berge 1980; Rock 1980), and modern plastic caps in the mid-1930s (Meikle 1995). Examples of the external thread cap include canning jar, mayonnaise jar, and pickle jar lids.

The crown cap was patented on February 2, 1892, by William Painter of Baltimore, Maryland (Rock 1980). The crown cap was placed over the finish and then crimped around a lip or groove in the finish to seal the container. This closure was lined with cork from 1892 until circa 1965 (IMACS 2001; Riley 1958; Rock 1980). Crown caps with composition liners appeared in 1912, and both cork and composition liners were gradually phased out following the introduction of the plastic liner in 1955 (IMACS 2001; Riley 1958). The majority of commercially produced glass soda bottles have crown cap closures.

Stoppers, the second major closure type, are secured to the finish interior of bottles, usually by forcing a portion of the stopper into the bore of the finish. Stopper types include cork, glass, inside screw, porcelain-top, Hutchinson Spring, Electric, Pittsburgh, and Lightning. Cork stoppers were the most common historic closure type.

Most glass stoppers use ground or roughened tapered stems along with a roughened finish inside to seal bottles. The "modern" ground and tapered glass stopper was developed in Europe around 1725 (Holscher 1965). Glass stoppers came in many shapes, sizes, and styles and were used as closures in many different types of bottles. As with the cork stopper, the glass stopper was phased out in the 1920s with the advent of the crown cap closure (Berge 1980; Jones and Sullivan 1985).

Seal closures utilized the vacuum on the interior of the glass container. The heating and then cooling of the bottle's contents created the vacuum. Seal closures, although dating back to 1810, did not become popular until the mid-twentieth century. These closures were most often used in food jars (Berge 1980). There were several types of seal closures including Phoenix, Sure Seal, Giles, spring seal, and disc seal.

The disc seal was used as early as 1810 by Nicholas Appert (Berge 1980). John L. Mason used this type of closure on his patented fruit jar in 1858 (Berge 1980). Mason's closure was made of zinc and was held in place with an exterior screw cap ring. Unfortunately, the zinc reacted with the contents of the jars, giving the contents an unpleasant metal taste (Jones and Sullivan 1985). Glass liners were then developed and added to the disc around 1869 by Lewis R. Boyd (Toulouse 1969, 1977). These liners prevented the zinc from reacting with the contents of the jar. To aid in opening, Boyd added a handle to the disc circa 1900 (Toulouse 1977). Both of these disc seal types were used until around 1950 (Jones and Sullivan 1985; Toulouse 1969, 1977). In 1865, the Kerr two piece seal was patented. This system utilized a metal seal disc held in place by an exterior screw cap with no center. This seal and cap type system is still in use today.

The closure artifacts recovered from the current project date from the 1860s to the last half of the twentieth century. Three aluminum screw-on caps were recovered dating after 1924 (Lief 1965:29). One mason zinc canning jar lid with a glass lid liner was also recovered dating from 1869 to 1950 (Toulouse 1977:91,96).

Personal Group (N = 3)

The personal group includes artifacts assumed to have belonged to individuals. This category of artifacts includes health and grooming items, jewelry and beads, coins, music and art items, personal items, toys, and games. Tobacco products are also subsumed into this category. Artifacts related to health and grooming (n = 1), personal items (n = 1), and toys (n = 1) were recovered from the project area.

One health and grooming item was identified as an opaque white glass cosmetics jar container dating from 1830 to 1960 (Husfloen 1992:163). One nickel-plated mini miners flashlight was also recovered. This flashlight was marked "CHALLENGE" and was dated circa 1933 (Flashlight Museum 2009). The toy artifact was identified as a two-part iron/steel toy train car and was not assigned a specific date.

Discussion

There were 24 historic artifacts recovered during the current phase I survey. The material collected is discussed in detail above and summarized below in the site discussion.

Only one architectural group item was recovered from this site. This item was identified as a cut marble fragment and was not assigned a specific date.

The domestic group contained container glass (n = 9), ceramics (n = 2), container closures (n = 4), and glass tableware (n = 3). The ceramic inventory consisted of ironstone (n = 1) and porcelain (n = 1).

The ironstone recovered was identified as a decal-decorated plate with gilt accents. This plate fragment dated from 1930 to 1958, due to an identifiable maker's mark on the base utilized by the Pope-Gosser China Company. The porcelain recovered was identified as an overglaze decorated decal platter dating after 1911. This platter base also contained an identifiable maker's mark utilized by the Noritake China Company.

Container glass included only ABM glass. The ABM (n = 9) was amber, clear, cobalt, and light green. Attributes included Individual Section molds, Owens molds, embossing, and external thread finishes. Nine vessels were identified in the ABM assemblage, including four commercial containers, one liquor bottle, three medicine bottles, and one miscellaneous bottle. Three maker's marks were noted in the ABM category. Two of these were utilized by the Owens Illinois Glass Company. The first dated from 1929 to 1954 and the other dated from 1940 to 1954. The third maker's mark was used by the Foster-Forbes Glass Company after 1929. Unless otherwise noted, the remaining ABM glass dated after 1903.

Container closures included three aluminum shell screw-on caps dating after 1924 and one mason zinc canning jar lid with a glass liner dating from 1869 to 1950. Glass tableware (n = 3) was all identified as press molded. All of these sherds were also clear. Three vessels were identified in the glass tableware assemblage, including two bowls and one tumbler.

The clothing group was represented by two artifacts. Both of these were rubber shoe heel fragments, and neither was assigned a specific date.

Three personal items were recovered during the current survey. One health and grooming item was identified as an opaque white glass cosmetics jar dating from 1830 to 1960. One personal item was also recovered and was identified as a nickel-plated mini miner's flashlight dating after 1933. One iron/steel toy train car was also recovered but was not assigned a specific date.

Artifacts, such as the glass tableware, recovered from 15Jf763 were manufactured as early as the 1860s, but they were still commonly used until the early to mid-twentieth century. Other artifacts in the assemblage, such as the ABM glass, decal-decorated ironstone, and container closures, date to the early to mid-twentieth century. Historic maps of this site indicate that before the 1950s, a structure was present close to this site; however, a structure was never mapped at this exact location. The material recovered from this site was located at the end of a road that was delineated on historic maps and may be associated with a trash dump rather than an actual structure, which is supported by the fact that much of the recovered and observed artifact assemblage consisted of whole (or nearly whole) glass and ceramic vessels. When the power plant began production in 1954, the nearby former structure was likely demolished, and much of its debris may have been dumped at 15Jf763. Based on the material recovered from this site, it is probable that the artifacts are the remains of either the former structure or a contemporaneous trash dump. The artifact types are consistent with a domestic occupation dating to this time (the first half of the twentieth century), and no structures were indicated within the project area.

VI. RESULTS

During the course of the current survey, one previously unrecorded archaeological site (15Jf763) was documented. A description of this site is presented below, and the location of the site is depicted in Figure 2.

Site 15Jf763

Elevation: 134.5 m (423.0 ft) AMSL
Component(s): historic
Site type(s): farmstead/or historic residence
Size: 1,800 sq m (19,376 sq ft)
Distance to nearest water: 40 m (131 ft)
Direction to nearest water: east
Type and extent of previous disturbance: 76–99 percent disturbed, probably by bulldozing
Topography: Terrace
Vegetation: Mixed hardwood forest
Ground Surface Visibility: 50–90 percent
Aspect: East
Recommended NRHP status: not eligible

Site Description

Site 15Jf763 was the remains of a historic residence dating from the early to mid-twentieth century. The site was located approximately 607 m (1,992 ft) north-northeast of the intersection of KY 1934 (Cane Run Road) and Lower Hunters Trace near the community of Riverside Gardens, 1,405 m (4,608 ft) southwest of the intersection of Camp Ground Road and Lees Lane, and 588 m (1,929 ft) due east from the guard house at the Cane Run Generating Plant. It was identified in a strip of forest on a level terrace above Garrison Ditch at an elevation of 134 m (440 ft) AMSL.

Vegetation consisted of light forest with little undergrowth, and ground surface visibility was approximately 51–90 percent because of the vegetation and leaf litter (Figure 11). There appeared to be a disused farm road immediately west of the site (based on a layer of gravel in the STPs in that area, later confirmed with historic maps). The site was identified by the presence of cultural materials on the ground surface (Figure 12). 15Jf763 measured 60 m (197 ft) north–south by 30 m (100 ft) east–west, and covered 1,800 sq m (19,376 sq ft). Site boundaries were defined by the lack of cultural material to the north, south, and west, and by Garrison Ditch to the east (it is probable the site extends outside the project boundary in that direction, as some artifacts were found on the slope).

Figure 11. Overview of Site 15Jf763.

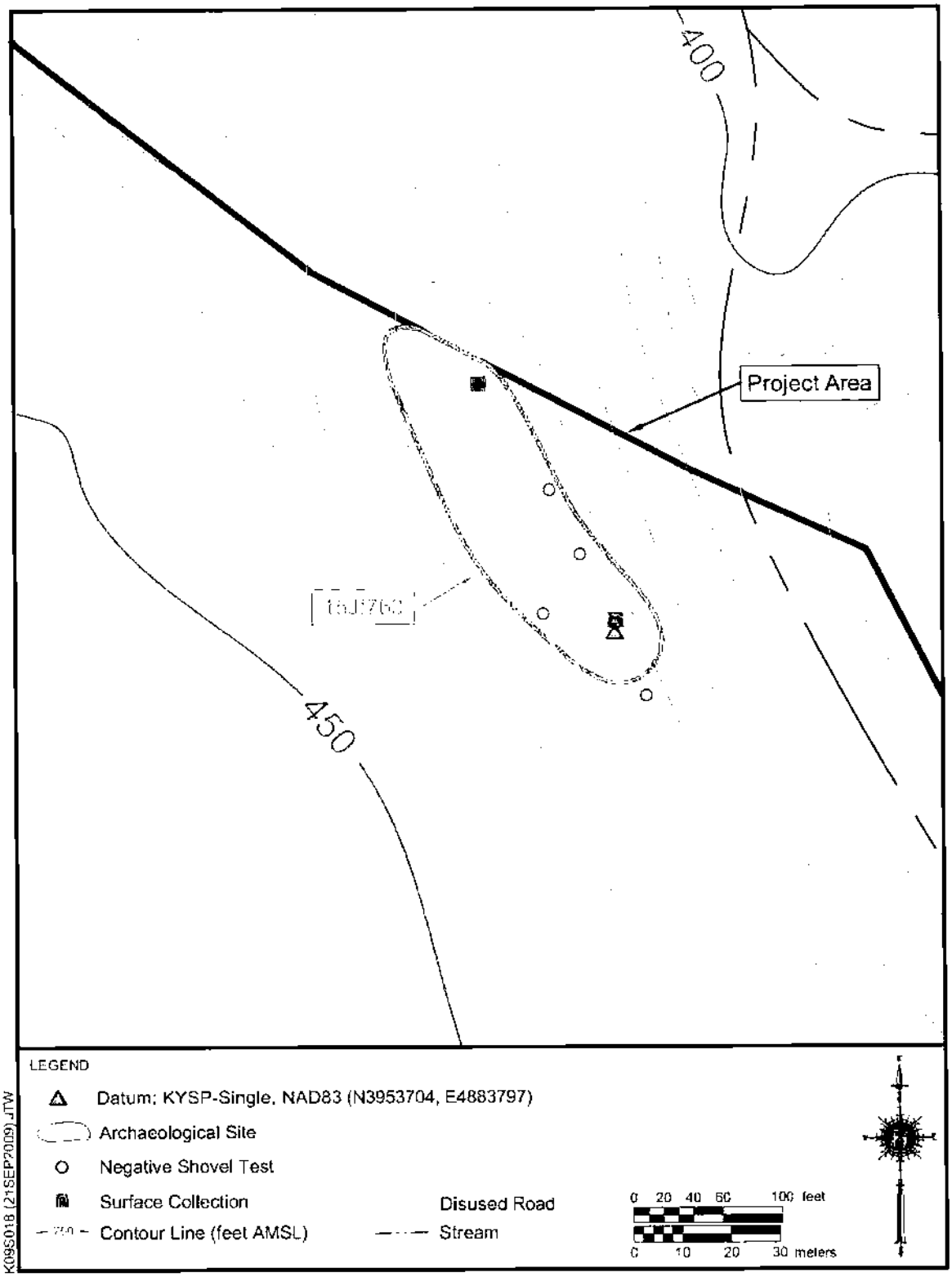

Figure 12. Plan view of Site 15Jf763.

Investigation Methods

All artifacts collected were located on the surface of the ground, which was systematically walked (at intervals no greater than 3 m). Any observed artifacts were flagged and their locations plotted on a site-plan map. Because all of the artifacts were recovered from a small area, they were bagged as a general surface collection.

Five screened shovel tests were excavated at the site (Figure 12). Shovel tests were excavated among the surface artifacts and to their west, near the location of a historical map structure. None of the shovel tests produced cultural material. The positions of all artifact groups, including those not returned to the lab (e.g., the rusticated concrete blocks and dressed building stone), were recorded with the GPS.

Depositional Context

Urban Land – Udorthents series soils were mapped for the site. The soil profile consisted of a shallow Ap horizon of dark brown (10YR 3/3) clay loam to depths between 2 and 10 cm below ground surface (bgs) followed by a subsoil of yellowish brown (10YR 5/4) silty clay loam. Because ground surface visibility was good, only limited shovel testing was conducted to assess soil stratigraphy and site integrity. Five shovel tests were excavated within the site boundaries at 10-m intervals. Cultural materials were only recovered from the ground surface and were not found in any of the shovel tests (Figure 13).

The soils at Site 15Jf763 appeared to have been severely depleted through agricultural use, land clearance, and industrial modification. The Ap at the site consisted primarily of subsoil (former B and C horizons). All artifacts at the site were recovered from the Ap horizon and, as such, have poor integrity.

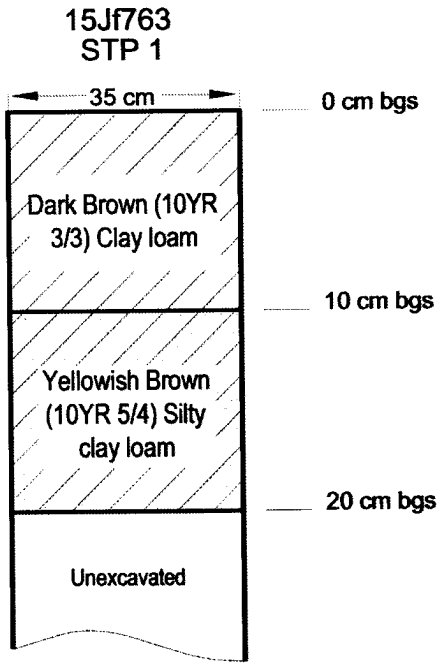

Figure 13. Representative soil profile from Site 15Jf763.

Artifacts

All of the artifacts recovered from Site 15Jf763 were historic, dating primarily to the first half of the twentieth century (Table 3). Historic materials noted, but not recovered, consisted of architectural materials such as rusticated concrete block; marble paving slabs approximately 4 cm (1.5 in) thick of a type that would be used for stair treads; and dressed building stone in various shapes, including a window sill or door lintel approximately 10-x-15 cm (4-x-6 in) in section and .8 m (2.5 ft) long. Domestic artifacts recovered included container glass, ceramic tableware, toys, and shoe heels (see Figure 10 and front cover).

Table 3. Historic Artifacts from Site 15Jf763.

Provenience	Class	Type	Count	Min Date	Max Date
N1000 E1000	Ceramics	Ironstone	1	1930	1958
N1000 E1000	Ceramics	Porcelain	1	1911	
N1000 E1000	Container Closures	Commercial Containers	3	1924	
N1000 E1000	ABM	Clear glass	1	1929	1954
N1000 E1000	ABM	Clear glass	1	1940	1954
N1000 E1000	ABM	Amber glass	1	1929	
N1000 E1000	ABM	Light green glass	1	1925	
N1000 E1000	ABM	Clear glass	4	1903	
N1000 E1000	ABM	Cobalt glass	1	1903	
N1000 E1000	Container Closures	Home Canning Jars	1	1869	1950
N1000 E1000	Glass Tableware	Press mold	3	1864	
N1000 E1000	Construction Materials	Marble (collected)	1		
N1000 E1000	Construction Material	Marble (not collected)	20*		
N1000 E1000	Footwear	Sole / Heel	2		
N1000 E1000	Personal Items	Other	1	1933	
N1000 E1000	Health and Grooming	Cosmetic container	1	1830	1960
N1000 E1000	Toys and Games	Vehicle: non-motorized	1		
N1005 E1005	Construction Materials	Dressed Stone Blocks	10*		
N1010 E1000	Construction Materials	Marble	15*		
N1030 E1000	Construction Materials	Dressed Stone Sill	1		
N1070 E990	Construction Materials	Rusticated Concrete Block	8*		

**Approximate Count*

Summary and National Register Evaluation

Based on the 1950 Kosmosdale 15-min series map (USGS), two historic structures dating circa 1900–1960 were located in close proximity to these finds, and it is probable that these materials came from one of these structures. Alternatively, the materials may simply have been dumped at the end of the disused road, although their distribution and the number of intact artifacts argue against the dump hypothesis. In either event, the materials were all found on the surface, and there was no evidence for subsurface features.

Site 15Jf763 is not considered to have the potential to provide important information about local or regional history and is not eligible for the NRHP (Criterion D), and no further work is recommended. It is unlikely that further investigation of Site 15Jf763 would produce information beyond that recorded during the current survey. The remains have poor depositional integrity—all artifacts were confined to plow zone contexts. In addition, there is no evidence suggesting the potential for sub–plow zone features to be located at the site.

VII. CONCLUSIONS AND RECOMMENDATIONS

Note that a principal investigator or field archaeologist cannot grant clearance to a project. Although the decision to grant or withhold clearance is based, at least in part, on the recommendations made by the field investigator, clearance may be obtained only through an administrative decision made by the lead federal agency in consultation with the State Historic Preservation Office (the Kentucky Heritage Council [KHC]).

The archaeological survey for the borrow area, settling ponds, and flyash storage area at the LG&E Cane Run Generating Plant in Jefferson County, Kentucky, resulted in the discovery of one previously unrecorded archaeological site. Site 15Jf763 is not considered eligible for the NRHP. The site, a scatter of historic artifacts and building materials, produced few artifacts and demonstrated poor integrity and lack of research potential; no further work is recommended. Because no sites listed in, or eligible for, the NRHP will be affected by the proposed project, cultural resource clearance for the borrow area, settling ponds, and flyash storage area is recommended.

If any previously unrecorded archaeological materials are encountered during construction activities, the KHC should be notified immediately at (502) 564-6662. If human skeletal material is discovered, construction activities should cease, and the KHC, the local coroner, and the local law enforcement agency must be notified, as described in KRS 72.020.

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APPENDIX A. SCOPE OF WORK

Proposal for Cultural Resource Survey

May 4, 2009

Submitted to:

Stephen Hall

Stantec Consulting Services, Inc.
350 Missouri Avenue, Suite 100
Jeffersonville, IN 47130-3078

Project Identification

Louisville Gas & Electric Company
Coal Storage Areas
Cane Run Generating Station, Louisville
Jefferson County, Kentucky

Project Area to be Studied

The proposed expansion of the Cane Run Generating Station on the Ohio River in southwestern Jefferson County consists of an approximately 100+ acre area. The project is in preliminary design stage with most of the elements north and south of Mill Creek Cutoff and east and west of Garrison Ditch southwest of the community of Riverside Gardens.

Scope of Services

The cultural resource investigations to identify archaeological sites and historic structures will be conducted in accordance with current *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports* issued by the Kentucky State Historic Preservation Office. For the purposes of this study, the area encompassing the maximum extent of the proposed expansion footprints will be examined for cultural resources. The amount of area requiring intensive field survey may be reduced with additional information on current and past use.

File Search/Archival Research/APE

A review of the archaeological site files at the Office of State Archeology (SHPO) will be conducted for the proposed expansion plus a two kilometer buffer.

Field Research

The field investigation will consist of an intensive survey of the 100+ ac of proposed expansion area following standard methods (i.e., pedestrian and shovel test survey). The entire project area will be subject to a visual examination to identify and above ground historic resources. With regard to the survey for archaeological sites, it appears that approximately 40 acres of the area either consists of slopes or has been disturbed by borrow activities and stream channeling as well as existing elements of the Can Run Generating Station facilities. Other areas consist of flat areas above Mill Creek Cutoff and Garrison Ditch (approximately 30 acres) and the Mill Creek Cutoff floodplain (approximately 30 acres). The portions of the project area that cross terrain with good surface visibility (for example

plowed/cultivated fields) or characterized by steep slopes (creek bank) will be subject to pedestrian survey. This entails a walking, visual inspection of the ground surface to identify historic and prehistoric artifacts. Portions of the project above Mill Creek Cutoff and Garrison Ditch that are located on relatively flat terrain with poor surface visibility will have to be shovel tested. This assessment method requires the excavation of screened shovel tests measuring 35 cm in diameter at intervals of 20 m.

Furthermore, depositional environments occur within the project area which are conducive to the preservation of archaeological deposits in deeply buried contexts (greater than can be discovered by standard surficial survey techniques such as pedestrian or shovel test survey). Within the project area, Holocene-age alluvial sediments which occur along the Mill Creek Cutoff would be the focus of this deep testing. It is estimated that approximately 30 acres of alluvial sediments occur within the project area. The floodplain of Mill Creek Cutoff will not be shovel tested because any cultural resources in this location are likely buried by recent sediments. In lieu of shovel testing, deep testing of the floodplain Mill Creek Cutoff will be conducted to determine the presence of buried cultural remains. This will be completed through backhoe trenching. Backhoe trenching is recognized as a useful and efficient method for exploring subsurface deposits for archaeological prospection within 2–3 m of the surface. The subsurface survey will also include a limited amount of hand excavation to 1) determine if archaeological materials are present but not observed in trench walls, 2) sample archaeological horizons observed in trench walls, and/or 3) expose and excavate features observed in trench walls.

A maximum of 15 trenches between 2 and 4 m in depth would be necessary to sample the deep deposits in the project area. This would roughly consist of a sampling interval of one trench no more than 100 m apart, across floodplain alluvium. If necessary, a hand-dug sample unit will be excavated adjacent to the trench to confirm the presence of archaeological deposits. No more than one sq m of hand excavation will be placed adjacent to trenches during this stage of the investigation. It is assumed that Louisville Gas & Electric Company will provide the backhoe and operator. If the areas are not accessible to a backhoe, screened hand-operated bucket augers will be excavated.

All archaeological sites and historic structures discovered within the intensive survey area will be recorded following current SHPO specifications.

Deliverables

The results of the archival and field research will be documented in a detailed written report. The report will conform to *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports*. The report will describe all cultural resources located during the study and make recommendations for their treatment in relation to potential impacts. In addition, site survey forms will be prepared for each archaeological site recorded and submitted to OSA. A historic structure form will be completed for each historic structure documented and submitted to the Kentucky Heritage Council (KHC). Seven copies of the report will be submitted to Stantec. CRAI will make any necessary revisions to the report requested by the reviewing agencies.

Schedule

We can initiate the study within 5-10 business days of NTP. It is estimated that the field survey will take between 8 and 10 days to complete. The report of the study can be submitted to DMP within 25-45 working days of the completion of the fieldwork, depending on the results.

APPENDIX B. HISTORIC MATERIALS RECOVERED

Table B.1. Historic Materials Database.

Site	Cat #	Bag #	Phase	North	East	Depth	Group	Class	Type	Attribute 1	Attribute 2	Attribute 3	N	Wt	Vessel code	Vessel part	ID	MinDate	MaxDate	Comments
15Jf763	1	1	1	4226298	598075	GSC	Domestic	Ceramics	Ironstone	Decal	More than one color	Gilt accents	1		Plate	Rim, Body and Base	Y	1930	1958	"POPE-GOSSER/CHINA/MADE IN U.S.A." (Kovel 1986:199)
15Jf763	2	1	1	4226298	598075	GSC	Domestic	Ceramics	Porcelain	Decal and painted	Gold		1		Platter	Rim, Body and Base	Y	1911		Overglaze hand-painted "NORITAKE CHINA/HANDPAINTED/JAPAN ... AINFORD" (Kovel 1986:74)
15Jf763	3	1	1	4226298	598075	GSC	Domestic	ABM	Clear glass	Owen's mold		ABM, External thread	1		Commercial food container	Whole Vessel		1903	1955	"H.J.HEINZ CO./PAT'D" w/aluminum screw cap
15Jf763	3	1	1	4226298	598075	GSC	Domestic	Container Closures	Commercial Containers	Threaded: non-ferrous metal			1					1924		"PURE FOOD/57"
15Jf763	4	1	1	4226298	598075	GSC	Domestic	ABM	Clear glass	Owen's mold		ABM, External thread	1		Commercial food container	Whole Vessel	Y	1929	1954	"H.J.HEINZ CO./PAT'D"/"I" in "O" in diamond/Owens Illinois Glass Co. Toledo, OH (Toulouse 1972:403)
15Jf763	5	1	1	4226298	598075	GSC	Domestic	ABM	Clear glass	Owen's mold	Embossed	ABM, External thread	1		Medicine	Whole Vessel	Y	1940	1954	Graduated tick marks on body/"ABBOTT/LABORATORIES"/"I" in "O" in diamond/"Duraglas" Owens IL Glass Co. (Toulouse 1972:403) w/aluminum screw cap
15Jf763	5	1	1	4226298	598075	GSC	Domestic	Container Closures	Commercial Containers	Threaded: non-ferrous metal			1					1924		Aluminum screw cap "PHYSIOL/SALT" (saline solution)
15Jf763	6	1	1	4226298	598075	GSC	Domestic	ABM	Amber glass	Individual section	Embossed	ABM, External thread	1		Liquor / Beer / Wine	Whole Vessel	Y	1929		"FF" in circle on body/Foster-Forbes Glass Co. Marion, IN (Toulouse 1972:197)
15Jf763	7	1	1	4226298	598075	GSC	Domestic	ABM	Light green glass	Individual section		ABM	1		Misc. bottle	Base		1925		
15Jf763	8	1	1	4226298	598075	GSC	Domestic	ABM	Clear glass			ABM, External thread	1		Medicine	Rim with Body		1903		Aluminum screw-cap present
15Jf763	8	1	1	4226298	598075	GSC	Domestic	Container Closures	Commercial Containers	Threaded: non-ferrous metal			1					1924		Aluminum screw-cap "ISO SALT"
15Jf763	8	1	1	4226298	598075	GSC	Domestic	ABM	Cobalt glass			ABM, External thread	1		Medicine	Rim with Body		1903		
15Jf763	8	1	1	4226298	598075	GSC	Domestic	ABM	Clear glass		Embossed	ABM, External thread	2		Commercial food container	Rim with Body		1903		"...UMBO"...BUTT.../...SPANIS..." Jumbo Peanut Butter
15Jf763	9	1	1	4226298	598075	GSC	Domestic	Container Closures	Home Canning Jars	Mason zinc with liner			1					1869	1950	
15Jf763	10	1	1	4226298	598075	GSC	Domestic	Glass Tableware	Press mold	Clear	molded design		1		Bowl	Rim, Body and Base		1864		
15Jf763	10	1	1	4226298	598075	GSC	Domestic	Glass Tableware	Press mold	Clear	molded design		1		Bowl	Rim, Body and Base		1864		Hobnails
15Jf763	11	1	1	4226298	598075	GSC	Domestic	Glass Tableware	Press mold	Clear			1		Tumbler	Body with Base		1864		
15Jf763	12	1	1	4226298	598075	GSC	Architecture	Construction Materials	Marble	Unknown/Indeterminate			1	113.3						
15Jf763	13	1	1	4226298	598075	GSC	Clothing	Footwear	Sole / Heel	Rubber			2							Heels
15Jf763	14	1	1	4226298	598075	GSC	Personal	Personal Items	Other	Other metal			1				Y	1933		Nickle plated mini reiners flashlight "CHALLENGE" (www.flashlightmuseum.com)
15Jf763	15	1	1	4226298	598075	GSC	Personal	Health and Grooming	Cosmetic container	Glass			1					1830	1960	Opaque white glass
15Jf763	16	1	1	4226298	598075	GSC	Personal	Toys and Games	Vehicle: non-motorized	Iron / steel			1							Toy train car (2 halves)

Project Maps

Figure 1.

Location Map

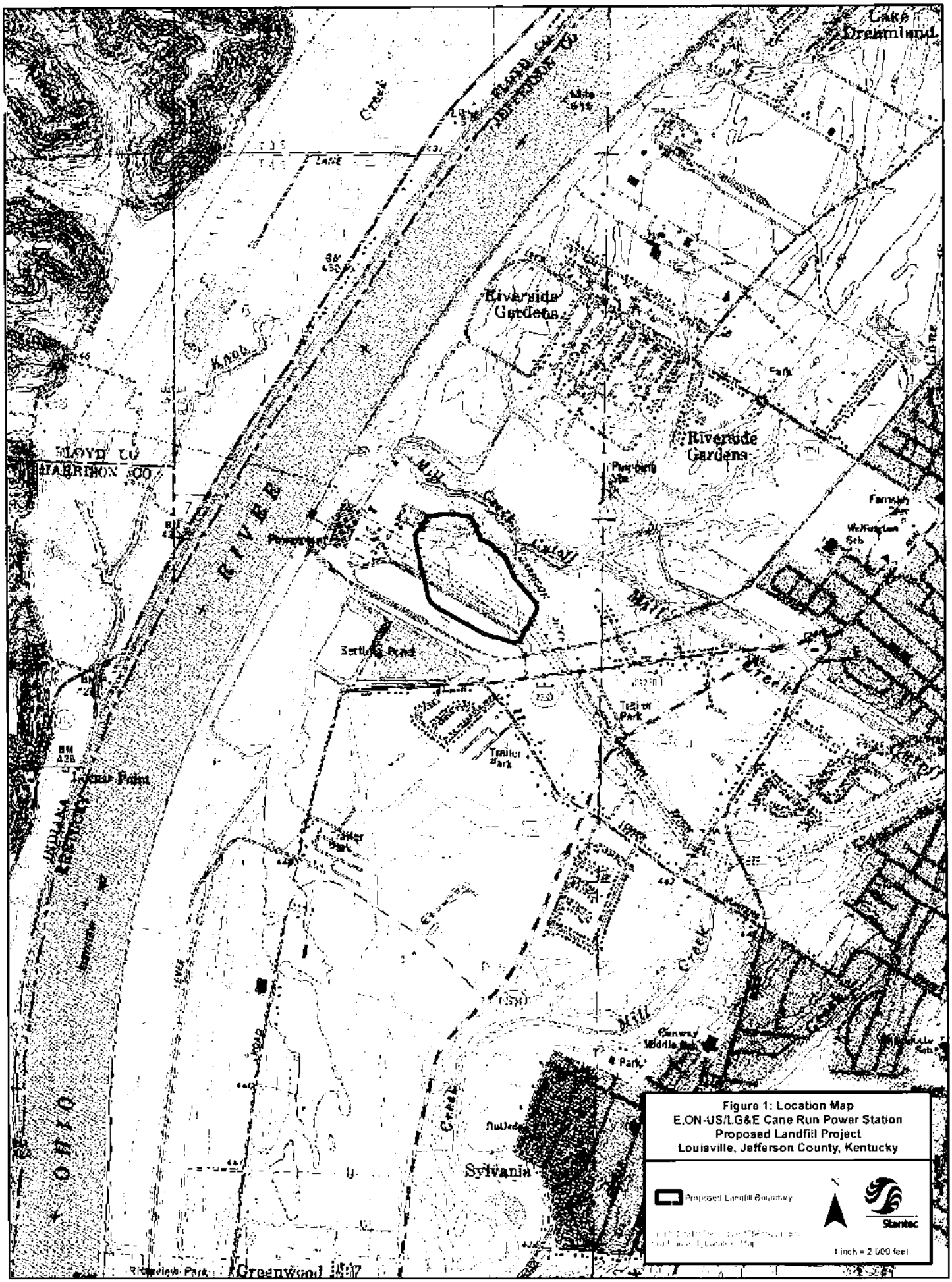
Lake Dreamland
Riverside Gardens
Riverside Gardens
LLOYD CO
HARRISON CO
Mill Creek
Powerline
Settlers Point
Trailer Park
Trailer Park
Turkey Point
Park
Sylvania
Greenwood
Figure 1: Location Map
E.ON-US/LG&E Cane Run Power Station
Proposed Landfill Project
Louisville, Jefferson County, Kentucky
Proposed Landfill Boundary
Stantec
1 inch = 2,000 feet

Figure 2
Jurisdictional Waters of the US Map

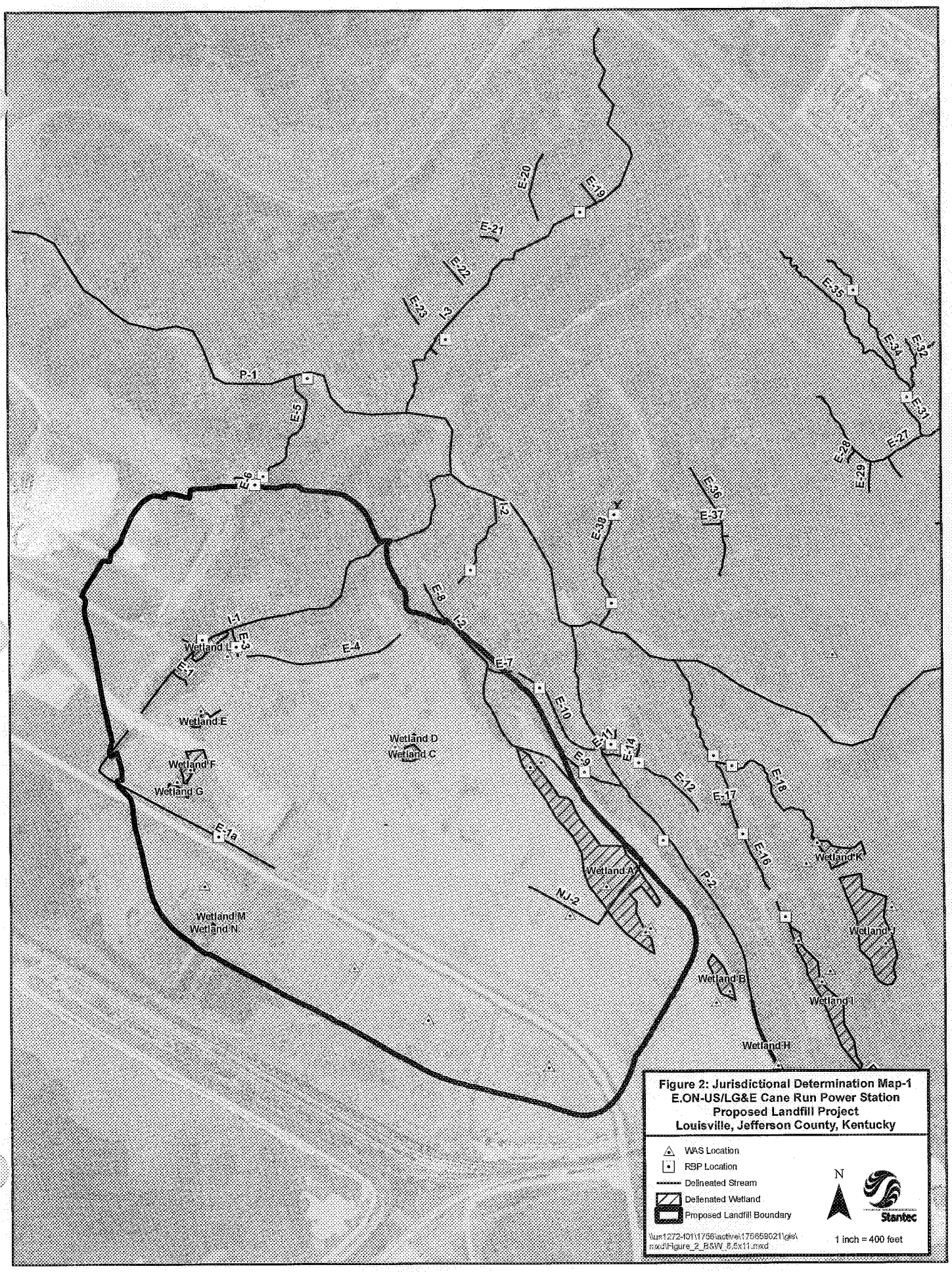

Figure 2: Jurisdictional Determination Map-1
E.ON-US/LG&E Cane Run Power Station
Proposed Landfill Project
Louisville, Jefferson County, Kentucky

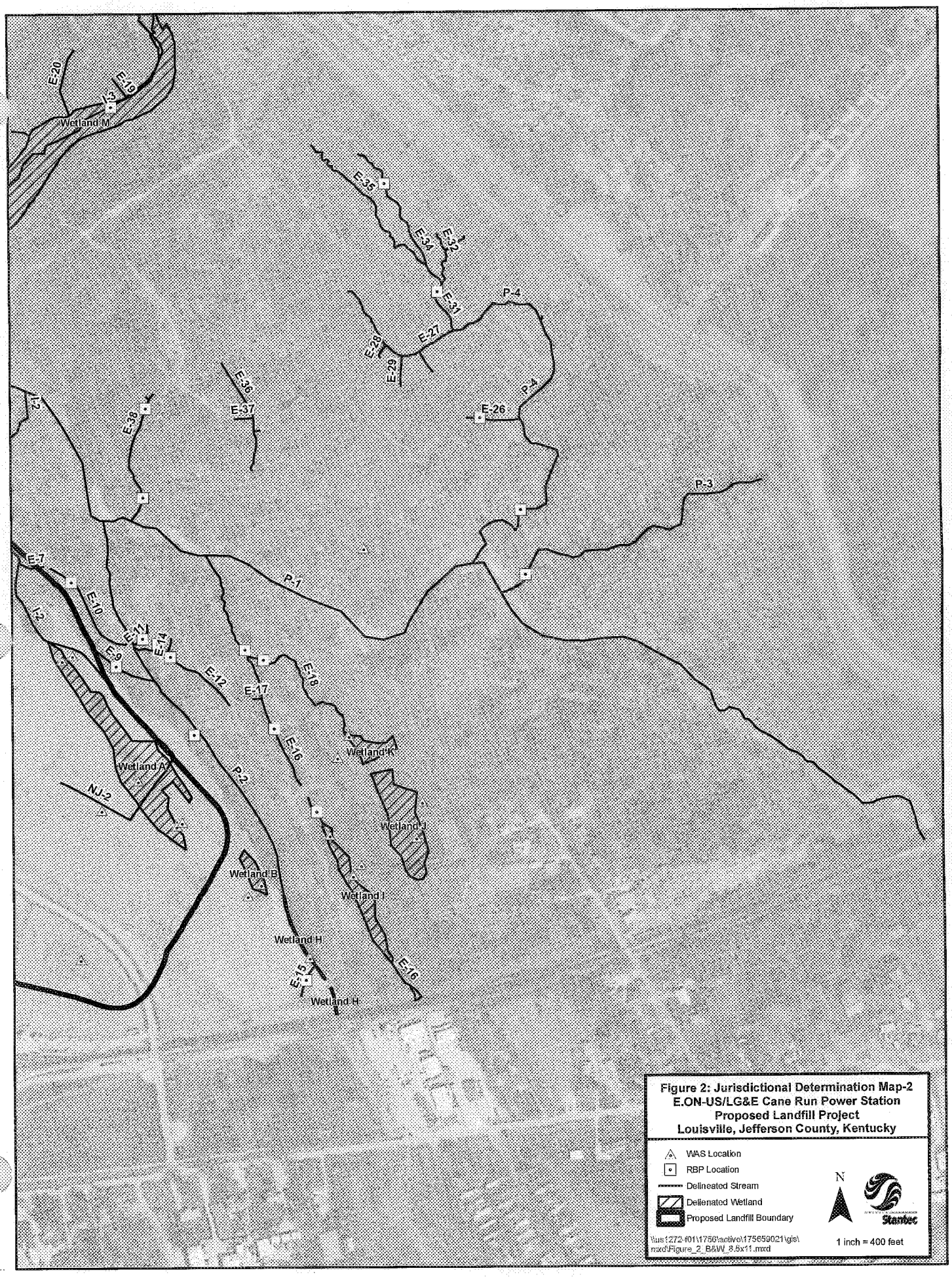

Figure 2: Jurisdictional Determination Map-2
E.ON-US/LG&E Cane Run Power Station
Proposed Landfill Project
Louisville, Jefferson County, Kentucky

WAS Location
RBP Location
Delineated Stream
Delineated Wetland
Proposed Landfill Boundary

N

Stantec

\\us1272-f01\1756\active\175659021\gis\mxd\Figure_2_B&W_8.5x11.mxd

1 inch = 400 feet

Figure 3.
Proposed Impacts Map

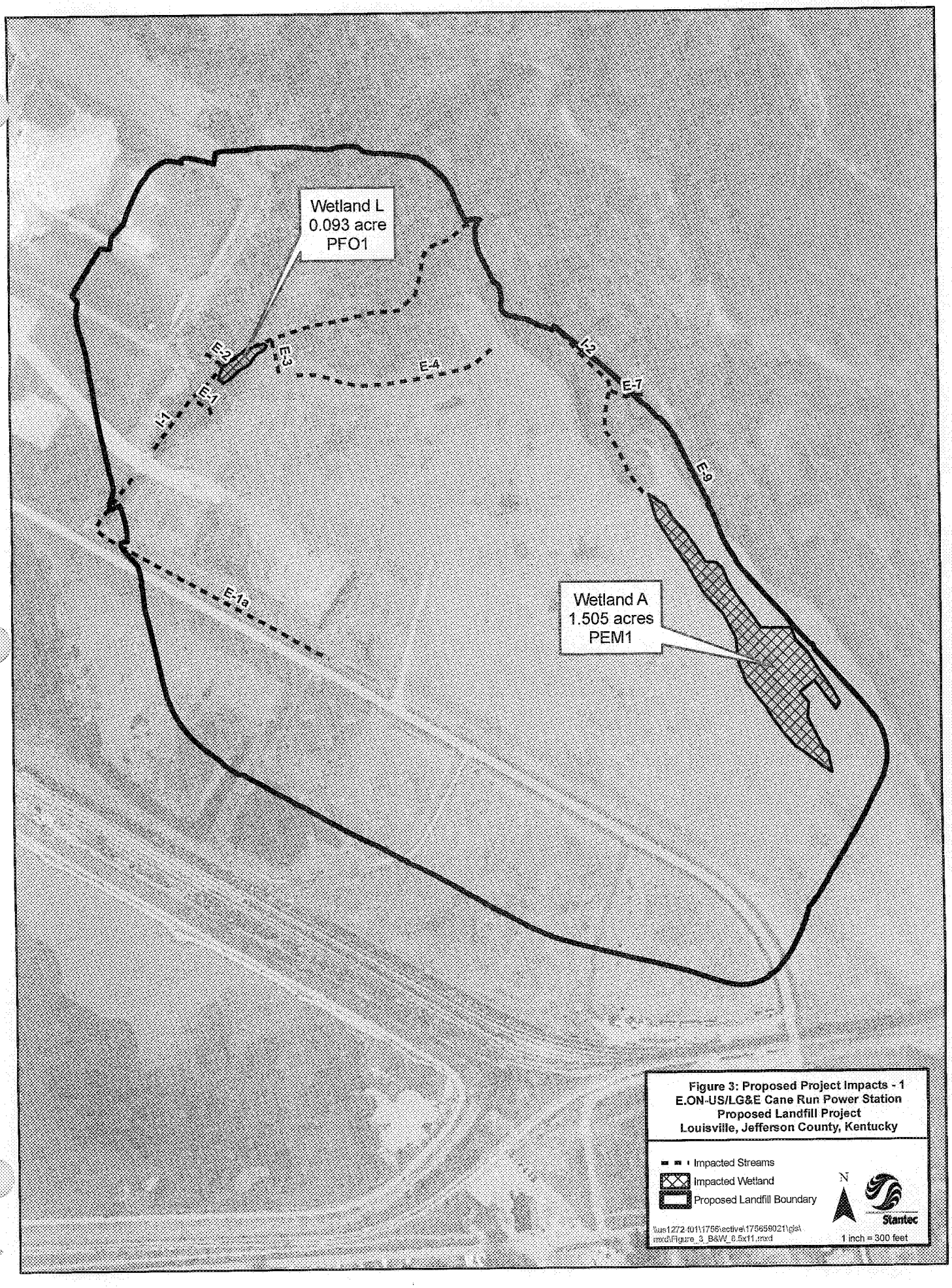

Figure 3: Proposed Project Impacts - 1
E.ON-US/LG&E Cane Run Power Station
Proposed Landfill Project
Louisville, Jefferson County, Kentucky